# UNITED STATES Coast Pilot®

# 4 Atlantic Coast: Cape Henry to Key West

## 2011 (43rd) Edition

This edition cancels the 42nd Edition, 2010, and has been corrected through 5th Coast Guard District Local Notice to Mariners No. 31/11 and the 7th Coast Guard District Local Notice to Mariners No. 31/11, and includes all previously published corrections.

Changes to this edition will be published in the Fifth Coast Guard District Local Notice to Mariners, the Seventh Coast Guard District Local Notice to Mariners and the National Geospatial-Intelligence Agency (NGA) Notice to Mariners. The changes also are available at http://nauticalcharts.noaa.gov/nsd/cpdownload.htm.


**U.S. Department of Commerce**
Dr. Rebecca M. Blank, Acting Secretary

**National Oceanic and Atmospheric Administration (NOAA)**
Jane Lubchenco, Ph.D., Under Secretary of Commerce for Oceans and Atmosphere, and Administrator, NOAA

**National Ocean Service**
David M. Kennedy, Assistant Administrator, National Ocean Service

Washington, DC
For sale by the National Ocean Service and its sales agents

VIRGINIA
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
FLORIDA
ATLANTIC OCEAN
Norfolk
Elizabeth City
Cape Hatteras
Cape Lookout
Jacksonville
Wilmington
Cape Fear
Charleston
Savannah
Jacksonville
St. Augustine
ST. LUCIE INLET
LAKE OKEECHOBEE
Miami
Key West
4
5
6
7
8
9
10
11
82°
80°
78°
76°
74°
36°
34°
32°
30°
28°
26°
Coast Pilot 4 - Chapter Index
Chapter 4 – Cape Henry to Cape Lookout
Chapter 5 – Cape Lookout to Cape Fear
Chapter 6 – Cape Fear to Charleston Harbor
Chapter 7 – Charleston Harbor to Savannah River
Chapter 8 – Savannah River to St. Johns River
Chapter 9 – St. Johns River
Chapter 10 – St. Johns River to Miami
Chapter 11 – Miami to Key West
Chapter 12 – Intracoastal Waterway
(not shown, Norfolk Virginia to Key West Florida, including Okeechobee Waterway)

# Preface

The United States Coast Pilot is published by the National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), pursuant to the Act of 6 August 1947 (33 U.S.C. 883a and b), and the Act of 22 October 1968 (44 U.S.C. 1310).

The Coast Pilot supplements the navigational information shown on NOAA nautical charts. The Coast Pilot is continually updated and maintained from inspections conducted by NOAA survey vessels and field parties, corrections published in Notices to Mariners, information from other Federal agencies, State and local governments, maritime and pilots' associations, port authorities, and concerned mariners.

NOAA's Office of Coast Survey encourages public feedback regarding its suite of nautical charting products and services through the Nautical Inquiry/Discrepancy Reporting System. This system allows comments, inquiries and chart discrepancies to be submitted directly to NOAA's nautical charting program. Inquiries are typically acknowledged by email within one day, and ninety percent are answered or resolved within five days.

General comments or inquiries can be made at http://nauticalcharts.noaa.gov/inquiry. Detailed nautical chart or Coast Pilot discrepancies can be reported at http://nauticalcharts.noaa.gov/discrepancy.

Coast Survey also maintains a toll free phone line for public comments or inquiries. Customers may contact the charting program by telephone on weekdays from 8:00 a.m. to 4:00 p.m. (Eastern Time) at 1-888-990-6622.

# Weekly Record of Updates

| *Date | No.of Updates | LNM Number | Entered By | Date Entered | *Date | No.of Updates | LNM Number | Entered By | Date Entered |
|---|---|---|---|---|---|---|---|---|---|
| 09-03-2011 | 0 | | | | | | | | |
| 09-10-2011 | 0 | | | | | | | | |
| 09-17-2011 | 0 | | | | | | | | |
| 09-24-2011 | 0 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

*Corrections are also available on the Internet at http://nauticalcharts.noaa.gov/nsd/cpdownload.htm.

| *Date | No.of Updates | LNM Number | Entered By | Date Entered | *Date | No.of Updates | LNM Number | Entered By | Date Entered |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

*Corrections are also available on the Internet at http://nauticalcharts.noaa.gov/nsd/cpdownload.htm.

# Contents

Preface . . . . . III

Weekly Record of Updates. . . . . V

Chapter 1: General Information . . . . . 1

Chapter 2: Navigation Regulations . . . . . 41

Chapter 3: Cape Henry to Key West . . . . . 171

Chapter 4: Cape Henry to Cape Lookout . . . . . 197

Chapter 5: Cape Lookout to Cape Fear . . . . . 221

Chapter 6: Cape Fear to Charleston Harbor . . . . . 237

Chapter 7: Charleston Harbor to Savannah River . . . . . 257

Chapter 8: Savannah River to St. Johns River . . . . . 275

Chapter 9: St. Johns River . . . . . 295

Chapter 10: St. Johns River to Miami . . . . . 313

Chapter 11: Miami to Key West. . . . . 341

Chapter 12: Intracoastal Waterway . . . . . 357

Appendix A . . . . . 401

Appendix B . . . . . 409

List of Critical Updates . . . . . 437

Index . . . . . 439

# General Information

## UNITED STATES COAST PILOT®

(1) The United States Coast Pilot, published by the National Oceanic and Atmospheric Administration (NOAA), is a series of nine nautical books (volumes) that encompasses a wide variety of information important to navigators of U.S. coastal/intracoastal waters and the waters of the Great Lakes. The Coast Pilot is intended to be used as a supplement to NOAA nautical charts. Much of the content cannot be shown graphically on the charts and is not readily available elsewhere. Topics which are covered include environmental factors of weather, climate, ice conditions, tides, water levels, currents, prominent coastal features and landmarks. Specific information on vertical clearances, wharf descriptions, small-craft facilities, hazards, dredged channels and depths are also provided. Navigation services and regulations are also identified including pilotage, towing, anchorages, routes and traffic separation schemes, environmental protection, and other Federal laws.

(2) **Amendments** to this publication are available from:

(3) NOAA: http://nauticalcharts.noaa.gov/nsd/cp-download.htm

(4) U.S. Coast Guard (USCG) Local Notices to Mariners: http://www.navcen.uscg.gov/

(6) National Geospatial-Intelligence Agency (NGA) U.S. Notice to Mariners: http://www.nga.mil/portal/site/maritime

### Using the Coast Pilot

(8) **Chapter 1** contains definitions of general and standard terms used throughout the volume; discussion of NOAA charting products and services; descriptions of maritime services by various U.S. Government agencies; Notices to Mariners, and other information pertinent to safe navigation.

(9) **Chapter 2** contains selected extracts from the Code of Federal Regulations (CFR) that affect mariners.

(10) **Chapter 3** contains general information that is peculiar to the region covered by a particular Coast Pilot volume. For example, practical information regarding offshore currents and dangers, coastal aids to navigation, prominent landmarks, and the general character of the coast and depths helpful in approaching the region.

(11) In **Chapter 4 and the remaining numbered chapters**, the detailed description of the region begins. A map precedes each chapter and outlines the nautical charts used in the area to be discussed. In these chapters, as much as possible, the coastal description is in geographic sequence, north to south on the east coast, east to west on the gulf coast, clockwise around each of the Great Lakes, and south to north on the west coast and Alaskan coast. Features are described as they appear on the largest scale chart, with that chart number prominently shown in blue.

(12) **Appendix A** contains contact information regarding the various products, services, and agencies detailed throughout the volume.

(13) **Appendix B** contains useful reference tables regarding, climate, meteorology, unit of measure conversions, abbreviations, etc.

(14) The **Index** contains geographic names mentioned throughout a Coast Pilot volume. These names are boldfaced and indexed along with the number of the largest scale chart on which the entire feature appears.

### Bearings

(15) These are true, and expressed in degrees from **000°** (north) to **359°**, measured clockwise. **General bearings** are expressed by initial letters of the points of the compass (e.g., **N, NNE, NE,** etc.). Whenever **precise bearings** are intended, degrees are used. **Light-sector bearings** are toward the light.

### Bridges and cables

(16) Vertical clearances of bridges and overhead cables are in feet above mean high water unless otherwise stated; clearances of drawbridges are for the closed position, although the open clearances are also given for vertical-lift bridges. Whenever a bridge span over a channel does not open fully to an unlimited clearance position, a minimum clearance for the sections over the channel should be given; the same guidelines apply to swing and pontoon bridges with openings less than 50 feet horizontally. Clearances given in the Coast Pilot are those approved for nautical charting, and are supplied by the U.S. Coast Guard (bridges) and U.S. Army Corps of Engineers (cables); they may be as-built (verified by actual inspection after completion of structures) or authorized (design values specified in the permit issued prior to construction). No differentiation is made in the Coast Pilot between as-built and authorized clearances. (See charts for horizontal clearances of bridges, as these are given in the Coast Pilot only when they are less than 50 feet (15 meters). Although, there are exceptions in two Coast Pilot books; they are Coast Pilot 6 and 7, in

areas where **tables** are used **all horizontal clearances** are listed.) Submarine cables are rarely mentioned.

### Cable ferries

(17) Cable ferries are guided by cables fastened to shore and sometimes propelled by a cable rig attached to the shore. Generally, the cables are suspended during crossings and dropped to the bottom when the ferries dock. Where specific operating procedures are known they are mentioned in the text. Since operating procedures vary, mariners are advised to exercise extreme caution and seek local knowledge. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

### Currents

(18) Stated current velocities are the averages at strength. Velocities are in knots, which are nautical miles per hour. Directions are the true directions to which the currents set (see Chapter 3, this book).

### Depths

(19) Depth is the vertical distance from the chart datum to the bottom and is expressed in the same units (feet, meters or fathoms) as those soundings found on the chart. (See Chart Datum, this chapter, for further detail.) The **controlling depth** is the least known depth of a channel. This depth is determined by periodic hydrographic surveys, and restricts use of the channel to drafts less than that depth. The **centerline controlling depth** applies only to the channel centerline or close proximity; lesser depths may exist in the remainder of the channel. The **midchannel controlling depth** is the controlling depth of only the middle half of the channel. **Federal project depth** is the original design dredging depth of a channel planned by the U.S. Army Corps of Engineers and may be deeper than current conditions. For this reason, project depth must not be confused with controlling depth. **Depths alongside** wharves usually have been reported by owners and/or operators of the waterfront facilities, and have not been verified by Government surveys. Since these depths may be subject to change, local authorities should be consulted for the latest controlling depths.

(20) For all maintained channels with controlling depths detailed on charts in tabular form, the Coast Pilot usually states only the project depths. For all other channels which may be depicted on charts with depth legends, notes or soundings, the Coast Pilot will strive to list the corresponding controlling depths with the dates of the latest known surveys. **Depths may vary considerably between maintenance dredging; consult the Notices to Mariners for latest controlling depths**.

### Under-keel clearances

(21) It is becoming increasingly evident that economic pressures are causing mariners to navigate through waters of barely adequate depth, with under-keel clearances being finely assessed from the charted depths, predicted tide levels, and depths recorded by echo sounders.

(22) It cannot be too strongly emphasized that even charts based on modern surveys may not show all seabed obstructions or the shoalest depths, and actual tide levels may be appreciably lower than those predicted.

(23) In many ships an appreciable correction must be applied to shoal soundings recorded by echo sounders due to the horizontal distance between the transducers. This separation correction, which is the amount by which recorded depths therefore exceed true depths, increases with decreasing depths to a maximum equal to half the distance apart of the transducers; at this maximum the transducers are aground. Ships whose transducers are more than 6 feet (1.8 meters) apart should construct a table of true and recorded depths using the Traverse Tables. (Refer to the topic on echo soundings elsewhere in chapter 1.)

(24) Other appreciable corrections, which must be applied to many ships, are for settlement and squat. These corrections depend on the depth of water below the keel, the hull form and speed of the ship.

(25) Settlement causes the water level around the ship to be lower than would otherwise be the case. It will always cause echo soundings to be less than they would otherwise be. Settlement is appreciable when the depth is less than seven times the draft of the ship, and increases as the depth decreases and the speed increases.

(26) Squat denotes a change in trim of a ship underway, relative to her trim when stopped. It usually causes the stern of a vessel to sit deeper in the water. However, it is reported that in the case of mammoth ships squat causes the bow to sit deeper. Depending on the location of the echo sounding transducers, this may cause the recorded depth to be greater or less than it ought to be. **Caution and common sense are continuing requirements for safe navigation.**

### Distances

(27) These are in nautical miles unless otherwise stated. A nautical mile is one minute of latitude, or approximately 2,000 yards, and is about 1.15 statute miles.

### Heights

(28) These are in feet (meters) above the tidal datum used for that purpose on the charts, usually mean high water. However, the heights of the decks of piers and wharves are given in feet (meters) above the chart datum for depths.

### Light and sound signal characteristics

(29) These are not described in the Coast Pilot. Also, light sectors and visible ranges are generally not fully described. This information can be found in U.S. Coast Guard Light Lists.

### Obstructions

(30) Wrecks and other obstructions are mentioned only if they are relatively permanent and in or near normal traffic routes.

### Positions

(31) Geographic positions listed in the Coast Pilot are referred to North American Datum of 1983 (NAD 83) unless otherwise noted.

### Radio aids to navigation

(32) These are seldom described. (See United States Coast Guard Light Lists, and National Geospatial-Intelligence Agency Radio Navigational Aids.)

### Ranges

(33) These are not fully described. "**A 339°** Range" means that the rear structure bears **339°** from the front structure. (See United States Coast Guard Light Lists.)

### Reported information

(34) Information received by NOAA from various sources concerning depths, dangers, currents, facilities, and other topics, which has not been verified by Government surveys or inspections, is often included in the Coast Pilot; such **unverified information** is qualified as "reported," and should be regarded with caution.

### Tides

(35) Tidal information for select locations may be found at the end of each chapter. Real-time water levels, tide predictions, and tidal current predictions are available at http://tidesandcurrents.noaa.gov.

### Time

(36) Unless otherwise stated, all times are given in local standard time in the 24-hour system. (Noon is 1200, 2:00 p.m. is 1400, and midnight is 0000.)

### Winds

(37) Directions are the true directions from which the winds blow, however, sometimes (rarely) compass points are used. Unless otherwise indicated, speeds are given in knots, which are nautical miles per hour.

## NAUTICAL CHARTS

### Chart symbols and abbreviations

(38) NOAA's Nautical Charts are a graphic portrayal of the marine environment showing the nature and form of the coast, the general configuration of the sea bottom, including water depths, locations of dangers to navigation, locations and characteristics of man-made aids to navigation, and other features useful to the mariner.

(39) The standard symbols and abbreviations approved for use on all regular nautical charts are in **Chart No. 1**, **United States of America Nautical Chart Symbols and Abbreviations**. This reference, jointly maintained by the National Geospatial-Intelligence Agency and NOAA, is available at http://nauticalcharts.noaa.gov/mcd/chart-no1.htm.

(40) On certain foreign charts reproduced by the United States, and on foreign charts generally, the symbols and abbreviations used may differ from U.S. approved standards. It is therefore recommended that navigators who acquire and use foreign charts and reproductions procure the symbol sheet or Chart No. 1 produced by the same foreign agency.

(41) Mariners are warned that the buoyage systems, shapes, and colors used by other countries often have a different significance than the U.S. system.

### Chart Projections

(42) The **Mercator projection** used on most nautical charts has straight-line meridians and parallels that intersect at right angles. On any particular chart the distances between meridians are equal throughout, but distances between parallels increase progressively from the Equator toward the poles, so that a straight line between any two points is a rhumb line. This unique property of the Mercator projection is one of the main reasons why it is preferred by the mariner.

### Chart Datum

(43) Chart Datum is the particular tidal level to which soundings and depth curves on a nautical chart or bathymetric map are referred. The tidal datum of **Mean Lower Low Water** is used on all NOAA charts, except for charts in the Great Lakes and non-tidal inland waterways.

(44) Mean Lower Low Water is defined as the arithmetic mean of the lower low water height of each tidal day (24.84 hours) observed over the National Tidal Datum Epoch. The National Tidal Datum Epoch is the specific 19-year period adopted by NOAA, as the official time segment over which tide observations are taken and reduced to obtain mean values for tidal datums. The present Epoch is 1983 through 2001. See http://www.co-ops.nos.noaa.gov/datum_options.html.

### Horizontal Datum

(45) Nautical charts are constructed based on one of a number of horizontal datums which are adopted to best represent individual regions around the world. Note that the terms horizontal datum, horizontal geodetic datum, and horizontal control datum are synonymous.

(46) The exact placement of lines of latitude and longitude on a nautical chart is dependent on the referenced horizontal datum. Charts of the United States are currently referenced primarily to the North American Datum of 1983 (NAD 83), and the World Geodetic System

1984 (WGS 84). WGS 84 is equivalent to the NAD 83 for charting purposes.

(47) NAD 83 and WGS 84 have replaced the North American Datum of 1927 and other regional datums as the primary horizontal datum to which NOAA charts are referenced. Since many geographic positions are still referenced to the older datums, NOAA has included notes on charts which show the amount to shift those positions in latitude and longitude to fit the chart's NAD 83 or WGS 84 projection.

(48) It should be noted that the physical shift between positions on older datums and NAD 83/WGS 84 was significant. The mariner should always be certain the positions they are plotting on a nautical chart are on the same datum as the chart.

### Accuracy of a nautical chart

(49) The value of a nautical chart depends upon the accuracy of the surveys on which it is based. The chart reflects what was found by field surveys and what has been reported to NOAA. The chart represents general conditions at the time of surveys or reports and does not necessarily portray present conditions. Significant changes may have taken place since the date of the last survey or report.

(50) Each sounding represents an actual measure of depth and location at the time the survey was made, and each bottom characteristic represents a sampling of the surface layer of the sea bottom at the time of the sampling. Areas where sand and mud prevail, especially the entrances and approaches to bays and rivers exposed to strong tidal current and heavy seas, are subject to continual change.

(51) In coral regions and where rocks and boulders abound, it is always possible that surveys may have failed to find every obstruction. Thus, when navigating such waters, customary routes and channels should be followed, and areas avoided where irregular and sudden changes in depth indicate conditions associated with pinnacle rocks, coral heads, or boulders.

(52) Information charted as "reported" should be treated with caution when navigating the area, because the actual conditions have not been verified by government surveys.

### Source diagrams

(53) A source diagram is provided on all NOAA charts, 1:500,000 scale and larger. This diagram is intended to provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data depicts the configuration of the bottom depends on the following factors:

(54) •Survey technology employed (sounding and navigation equipment).

(55) •Survey specifications in effect (prescribed survey line spacing and sounding interval).

(56) •Type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(57) Depth information on nautical charts is based on soundings from the latest available hydrographic survey, which in many cases may be quite old. The age of hydrographic surveys supporting nautical charts varies. Nearly half of all inshore hydrography was acquired by **leadline** (pre-1940) sounding technology.

(58) Prior to 1940, the majority of survey data acquired consisted of leadline soundings which were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. A deficiency with pre-1940 data exists in the leadline sounding method because it represents discrete single-point sampling. Depths of areas between or outside of leadline sounding points can only be inferred or estimated leaving the possibility of undetected features, especially in areas of irregular relief.

(59) From 1940 to 1990, the majority of survey data consisted of soundings resulting in **partial bottom coverage**. This type of sounding data is typically acquired using continuous-recording **single-beam echo sounders** as stand-alone survey systems. This survey method originally yielded a graphic record of the entire sounding line from which soundings were recorded at regular intervals. Using this graphic record, features which fell between the recorded soundings could be inserted into the data set. Since approximately 2001, single beam echo sounder data has been recorded digitally to automatically include all soundings in the data set. Although the sampling is continuous along the track of the sounding vessel, features such as discreet objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period has progressed from horizontal sextant angles, through land-based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

(60) From 1990 to the present, most surveys have been conducted using either **multibeam sonar systems** or a combination of **side scan sonar** and single beam echo sounder systems to achieve **full bottom coverage**. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multibeam bathymetry or side scan imagery, have been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne **light detection and ranging systems** (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered

## Source Diagrams

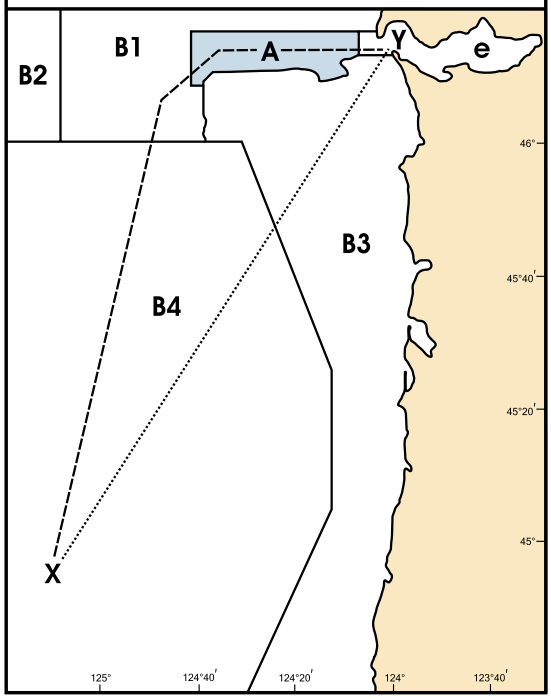
Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

• Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

• The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

**SOURCE**

| | | | |
|---|---|---|---|
| A | 1990-Present | NOS Surveys | full bottom coverage |
| B1 | 1990-Present | NOS Surveys | partial bottom coverage |
| B2 | 1970-1989 | NOS Surveys | partial bottom coverage |
| B3 | 1940-1969 | NOS Surveys | partial bottom coverage |
| B4 | 1900-1939 | NOS Surveys | partial bottom coverage |
| e | | Miscellaneous Surveys | |




• The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

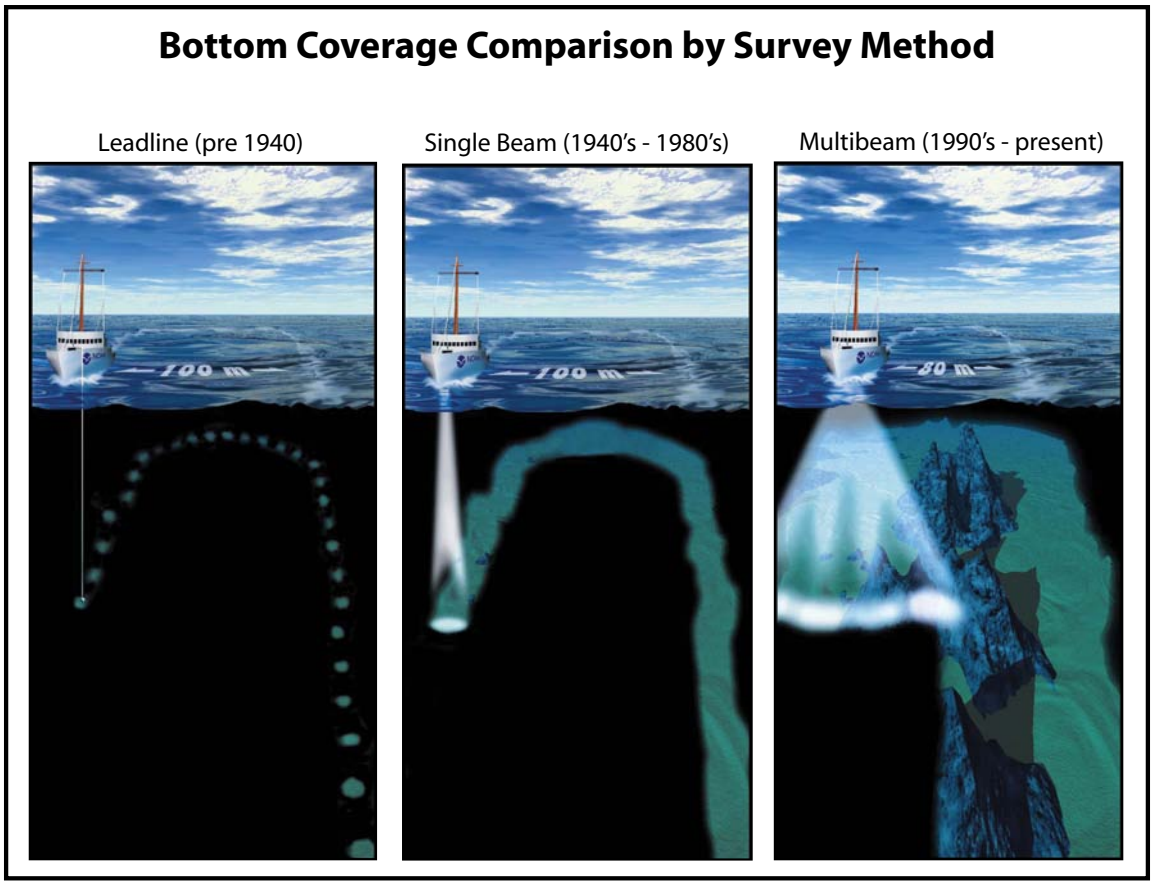
• The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.

• The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

• The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

• The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of more recent survey information collected with more modern technology.




full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multibeam sonar are considered adequate for the full bottom coverage designation. Stand alone LIDAR surveys are depicted on the Source Diagram as partial bottom coverage areas.

(61) Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over leadline, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the Source Diagram. Sounding data in water depths of approximately 4-6 meters (13-19½ feet) or less (8 meters (26 feet) or less in Alaskan waters) has typically been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

(62) The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors; such as water depths, bottom configuration, survey scale, general nature of the area, and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements, but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal, or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.

**Corrections to charts**

(63) It is essential for navigators to keep charts corrected through information published in the Notices to Mariners.

(64) NOAA's "Nautical Chart Update" website allows the mariner to update their nautical charts from one database that includes information from NOAA, NGA U.S. Notice to Mariners, U.S. Coast Guard Local Notices to Mariners, and the Canadian Coast Guard Notices to Mariners at: http://nauticalcharts.noaa.gov/mcd/updates/LNM_NM.html.

**Print On Demand Nautical Charts**

(65) Print On Demand (POD) Charts are updated weekly by NOAA with the most current U.S. Coast Guard Local Notice to Mariners, National Geospatial-Intelligence Agency Notice to Mariners, and critical safety information known to NOAA. They are available to the mariner five to eight weeks before the conventional chart is printed. POD charts are printed upon request and shipped overnight to the mariner under a partnership between NOAA and OceanGrafix, LLC. POD information and a list of participating POD chart agents, can be found at:

(66) http://nauticalcharts.noaa.gov/pod/POD.htm and
(67) http://www.oceangraphix.com.
(68) Print on Demand charts are certified by NOAA for navigational use.

### Revised Reprint Nautical Charts

(69) A revised reprint nautical chart provides mariners with up-to-date critical information on nautical charts by applying the critical corrections from all U.S. Coast Guard Local Notice to Mariners (LNM) and National Geospatial-Intelligence Agency Notice to Mariners (NM) issued since the current edition date. A revised reprint is published (rather than copies of the same chart without the critical updates applied) when printed stock of the current edition is low. Revised reprints are similar to NOAA's Print on Demand (POD) charts but are lithographically printed according to traditional paper chart standards. A listing of upcoming new editions and revised reprint charts published by NOAA is available at http://www.nauticalcharts.noaa.gov.

### Chart scale

(70) The scale of a chart is the ratio of a given distance on the chart to the actual distance that it represents on the earth. For example, one unit of measurement on a 1:10,000 scale chart is equal to 10,000 of the same unit on the earth's surface. **Large-scale charts** show greater detail of a relatively small area. **Small-scale charts** show less detail, but cover a larger area. Certain hydrographic information may be omitted on smaller-scale charts. **Mariners should always obtain the largest-scale coverage for near shore navigation.**

(71) The **scales of nautical charts** range from 1:2,500 to about 1:5,000,000. Graphic scales are generally shown on charts with scales of 1:80,000 or larger, and numerical scales are given on smaller scale charts. NOAA charts are classified according to scale as follows:

(72) **Sailing charts,** scales 1:600,000 and smaller, are for use in fixing the mariner's position approaching the coast from the open ocean, or for sailing between distant coastwise ports. On such charts the shoreline and topography are generalized and only offshore soundings, principal lights, outer buoys, and landmarks visible at considerable distances are shown.

(73) **General charts,** scales 1:150,000 to 1:600,000, are for coastwise navigation outside of outlying reefs and shoals.

(74) **Coast charts,** scales 1:50,000 to 1:150,000, are for inshore navigation leading to bays and harbors of considerable width and for navigating large inland waterways.

(75) **Harbor charts,** scales larger than 1:50,000, are for harbors, anchorage areas, and the smaller waterways.

(76) **Special charts**, various scales, cover the Intracoastal waterways and miscellaneous small-craft areas.

### U.S. Nautical Chart Numbering System

(77) This chart numbering system, adopted by NOAA and National Geospatial-Intelligence Agency, provides for a uniform method of identifying charts published by both agencies. Nautical charts published by the National Geospatial-Intelligence Agency and by the Canadian Hydrographic Service are identified in the Coast Pilot by an asterisk preceding the chart number.

### Blue tint in water areas

(78) A blue tint is shown in water areas on many charts to accentuate shoals and other areas considered dangerous for navigation when using that particular chart. Since the danger curve varies with the intended purpose of a chart a careful inspection should be made to determine the contour depth of the blue tint areas.

### Caution on bridge and cable clearances

(79) For bascule bridges whose spans do not open to a full vertical position, unlimited overhead clearance is not available for the entire charted horizontal clearance when the bridge is open, due to the inclination of the drawspans over the channel.

(80) The charted clearances of overhead cables are for the lowest wires at mean high water unless otherwise stated. **Vessels with masts, stacks, booms, or antennas should allow sufficient clearance under power cables to avoid arcing.**

(81) **Submarine cables and submerged pipelines** cross many waterways used by both large and small vessels, but all of them may not be charted. For inshore areas, they usually are buried beneath the seabed, but, for offshore areas, they may lie on the ocean floor. Warning signs are often posted to warn mariners of their existence.

(82) The installation of submarine cables or pipelines in U.S. waters or the Continental Shelf of the United States is under the jurisdiction of one or more Federal agencies, depending on the nature of the installation. They are shown on the charts when the necessary information is reported to NOAA and they have been recommended for charting by the responsible agency. The chart symbols for submarine cable and pipeline areas are usually shown for inshore areas, whereas, chart symbols for submarine cable and pipeline routes may be shown for offshore areas. Submarine cables and pipelines are not described in the Coast Pilots.

(83) In view of the serious consequences resulting from damage to submarine cables and pipelines, vessel operators should take special care when anchoring, fishing, or engaging in underwater operations near areas where these cables or pipelines may exist or have been reported to exist. Mariners are also warned that the areas where cables and pipelines were originally buried may have changed and they may be exposed; extreme caution should be used when operating vessels in depths of water comparable to the vessel's draft.

(84) Certain cables carry high voltage, while many pipelines carry natural gas under high pressure or petroleum products. Electrocution, fire, or explosion with injury, loss of life, or a serious pollution incident could occur if they are broached.

(85) Vessels fouling a submarine cable or pipeline should attempt to clear without undue strain. Anchors or gear that cannot be cleared should be slipped, but no attempt should be made to cut a cable or a pipeline.

### Artificial obstructions to navigation

(86) **Disposal areas** are designated by the U.S. Army Corps of Engineers for depositing dredged material where existing depths indicate that the intent is not to cause sufficient shoaling to create a danger to surface navigation. The areas are charted without blue tint, and soundings and depth curves are retained.

(87) **Disposal Sites** are areas established by Federal regulation (**40 CFR 220 through 229**) in which dumping of dredged and fill material and other nonbuoyant objects is allowed with the issuance of a permit. Dumping of dredged and fill material is supervised by the Corps of Engineers and all other dumping by the Environmental Protection Agency (EPA). (See U.S. Army Corps of Engineers and Environmental Protection Agency, this chapter, and Appendix A for office addresses.)

(88) **Dumping Grounds** are also areas that were established by Federal regulation (**33 CFR 205**). However, these regulations have been revoked and the use of the areas discontinued. These areas will continue to be shown on nautical charts until such time as they are no longer considered to be a danger to navigation.

(89) Disposal Sites and Dumping Grounds are rarely mentioned in the Coast Pilot, but are shown on nautical charts. **Mariners are advised to exercise caution in and in the vicinity of all dumping areas.**

(90) **Spoil areas** are for the purpose of depositing dredged material, usually near and parallel to dredged channels. Spoil areas are usually charted from survey drawings from U.S. Army Corps of Engineers after-dredging surveys, though they may originate from private or other Government agency surveys. On nautical charts, spoil areas are tinted blue, labeled and have all soundings and depth curves omitted from within their boundaries. Spoil areas present a hazard to navigation and even the smallest craft should avoid crossing them.

(91) **Fish havens** are artificial shelters constructed of various materials including rocks, rubble, derelict barges/oil rigs and specially designed precast structures. This material is placed on the sea floor to simulate natural reefs and attract fish. Fish havens are often located near fishing ports or major coastal inlets and are usually considered hazards to shipping. Before such a reef may be built, the U.S Army Corps of Engineers must issue a permit specifying the location and depth over the reef. Constructed of rigid material and projecting above the bottom, they can impede surface navigation and therefore represent an important feature for charting. Fish havens may be periodically altered by the addition of new material, thereby possibly increasing the hazard. They are outlined and labeled on charts and show the minimum authorized depth when known. Fish havens are tinted blue if they have a minimum authorized depth of 11 fathoms or less. If the minimum authorized depth is unknown and they are in depths greater than 11 fathoms, they are considered a danger to navigation. Navigators should be cautious about passing over fish havens or anchoring in their vicinity.

(92) **Fishtrap areas** are areas established by the U.S. Army Corps of Engineers, or State or local authority, in which traps may be built and maintained according to established regulations. The fish stakes which may exist in these areas are obstructions to navigation and may be dangerous. The limits of fishtrap areas and a cautionary note are usually charted. Navigators should avoid these areas.

### Local magnetic disturbances

(93) If measured values of magnetic variation differ from the expected (charted) values by several degrees, a magnetic disturbance note will be printed on the chart. The note will indicate the location and magnitude of the disturbance, but the indicated magnitude should not be considered as the largest possible value that may be encountered. Large disturbances are more frequently detected in the shallow waters near land masses than on the deep sea. Generally, the effect of a local magnetic disturbance diminishes rapidly with distance, but in some locations there are multiple sources of disturbances and the effects may be distributed for many miles.

### Compass roses on charts

(94) Each compass rose shows the date, magnetic variation, and the annual change in variation. Prior to the new edition of a nautical chart, the compass roses are reviewed. Corrections for annual change and other revisions may be made as a result of newer and more accurate information. On some general and sailing charts, the magnetic variation is shown by isogonic lines in addition to the compass roses.

### Echo soundings

(95) Ships' echo sounders may indicate small variations from charted soundings; this may be due to the fact that various corrections (instrument corrections, settlement and squat, draft, and velocity corrections) are made to echo soundings in surveying which are not normally made in ordinary navigation, or to observational errors in reading the echo sounder. Instrument errors vary between different equipment and must be determined by calibration aboard ship. Most types of echo sounders are factory calibrated for a velocity of sound in water of 800 fathoms per second, but the actual velocity may differ from the calibrated velocity by as much as 5 percent, depending upon the temperature and salinity of the waters in which the vessel is operating; the highest velocities

are found in warm, highly saline water, and the lowest in icy freshwater. Velocity corrections for these variations are determined and applied to echo soundings during hydrographic surveys. All echo soundings must be corrected for the vessel's draft, unless the draft observation has been set on the echo sounder.

(96) Observational errors include misinterpreting false echoes from schools of fish, seaweed, etc., but the most serious error which commonly occurs is where the depth is greater than the scale range of the instrument; a 400–fathom scale indicates 15 fathoms when the depth is 415 fathoms. Caution in navigation should be exercised when wide variations from charted depths are observed.

### Electronic Navigational Chart (NOAA ENC®)

(97) The NOAA Electronic Navigational Charts (ENCs) are vector-based digital files that give information about individual charted features. NOAA ENCs are composed of information layers that can be viewed separately such as aids to navigation, soundings and shoreline. They are intended for use in electronic charting systems (ECS) as well as Electronic Chart Display and Information Systems (ECDIS). NOAA ENCs are available free of charge at:http://nauticalcharts.noaa.gov/mcd/enc/index.htm.

## NOTICES TO MARINERS

(98) **Notices to Mariners** are published to advise operators of marine information affecting the safety of navigation. The notices include changes in aids to navigation, depths in channels, bridge and overhead cable clearances, reported dangers, and other useful marine information. They should be used routinely for updating the latest editions of nautical charts and related publications.

(99) **Local Notices to Mariners** are issued by each Coast Guard District Commander for the waters under his jurisdiction. (See Appendix A for Coast Guard district(s) covered by this volume.) These notices are usually published weekly and are available at http://www.navcen.uscg.gov/.

(100) **U.S. Notice to Mariners**, published weekly by the National Geospatial-Intelligence Agency, are prepared jointly with NOAA and the Coast Guard. These notices contain selected items from the Local Notices to Mariners and other reported marine information required by oceangoing vessels operating in both foreign and domestic waters. Special items covering a variety of subjects and generally not discussed in the Coast Pilot or shown on nautical charts are published annually in Notice to Mariners No. 1. These items are important to the mariner and should be read for future reference. These notices are available at http://msi.nga.mil/NGA-Portal/MSI.portal.

(101) All active Notices to Mariners affecting Tide and/or Tidal Current Predictions at the date of printing are published in the Tide Table and the Tidal Current Tables annually.

(102) **Marine Broadcast Notices to Mariners** are made by the Coast Guard to report deficiencies and important changes in aids to navigation. (See Radio Navigation Warnings and Weather, this chapter.)

(103) Vessels operating within the limits of the Coast Guard districts can obtain information affecting NOAA charts and related publications from the Local Notices to Mariners. Small craft using the Intracoastal Waterway and other waterways and small harbors within the United States that are not normally used by oceangoing vessels will require the Local Notices to Mariners to keep charts and related publications up-to-date.

## AIDS TO NAVIGATION

### Reporting of defects in aids to navigation

(104) Promptly notify the nearest Coast Guard District Commander if an aid to navigation is observed to be missing, sunk, capsized, out of position, damaged, extinguished, or showing improper characteristics.

(105) It is unlawful to establish or maintain any aid similar to those maintained by the U.S. Coast Guard without first obtaining permission from the Coast Guard District Commander. In the Great Lakes, applications should be submitted through the Cleveland District Office. The licensed officer in command of a vessel which collides with any aid must report the fact promptly to the nearest U.S. Coast Guard Sector.

### Lights

(106) The range of visibility of lights as given in the Light Lists and as shown on the charts is the **Nominal range,** which is the maximum distance at which a light may be seen in clear weather (meteorological visibility of 10 nautical miles) expressed in nautical miles. The Light Lists give the Nominal ranges for all Coast Guard lighted aids except range and directional lights.

(107) **Luminous range** is the maximum distance at which a light may be seen under the existing visibility conditions. By use of the diagram in the Light Lists, Luminous range may be determined from the known Nominal range, and the existing visibility conditions. Both the Nominal and Luminous ranges do not take into account elevation, observer's height of eye, or the curvature of the earth.

(108) **Geographic range** is a function of only the curvature of the earth and is determined solely from the heights above sea level of the light and the observer's eye; therefore, to determine the actual Geographic range for a height of eye, the Geographic range must be corrected by a distance corresponding to the height difference, the distance correction being determined from a table of "distances of visibility for various heights above sea level." (See Light List or Appendix B.)

(109) The maximum distances at which lights can be seen may at times be increased by abnormal atmospheric refraction and may be greatly decreased by unfavorable weather conditions such as fog, rain, haze, or smoke. All except the most powerful lights are easily obscured by such conditions. In some conditions of the atmosphere white lights may have a reddish hue. During weather conditions which tend to reduce visibility, colored lights are more quickly lost to sight than are white lights. Navigational lights should be used with caution because of the following conditions that may exist;

(110) A light may be extinguished and the fact not reported to the Coast Guard for correction, or a light may be located in an isolated area where it will take time to correct.

(111) In regions where ice conditions prevail the lantern panes of unattended lights may become covered with ice or snow, which will greatly reduce the visibility and may also cause colored lights to appear white.

(112) Brilliant shore lights used for advertising and other purposes, particularly those in densely populated areas, make it difficult to identify a navigational light.

(113) At short distances flashing lights may show a faint continuous light between flashes.

(114) The distance of an observer from a light cannot be estimated by its apparent intensity. The characteristics of lights in an area should always be checked in order that powerful lights visible in the distance will not be mistaken for nearby lights showing similar characteristics at low intensity such as those on lighted buoys.

(115) The apparent characteristic of a complex light may change with the distance of the observer, due to color and intensity variations among the different lights of the group. The characteristic as charted and shown in the Light List may not be recognized until nearer the light.

(116) Motion of a vessel in a heavy sea may cause a light to alternately appear and disappear, and thus give a false characteristic.

(117) Where lights have different colored sectors, be guided by the correct bearing of the light; do not rely on being able to accurately observe the point at which the color changes. On either side of the line of demarcation of colored sectors there is always a small arc of uncertain color.

(118) On some bearings from the light, the range of visibility of the light may be reduced by obstructions. In such cases, the obstructed arc might differ with height of eye and distance. When a light is cut off by adjoining land and the arc of visibility is given, the bearing on which the light disappears may vary with the distance of the vessel from which observed and with the height of eye. When the light is cut off by a sloping hill or point of land, the light may be seen over a wider arc by a ship far off than by one close to.

(119) Arcs of circles drawn on charts around a light are not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights which do not show equally in all directions, the bearings between which the variation of visibility or obscuration of the light occurs.

(120) Lights of equal candlepower but of different colors may be seen at different distances. This fact should be considered not only in predicting the distance at which a light can be seen, but also in identifying it.

(121) Lights should not be passed close aboard, because in many cases riprap mounds are maintained to protect the structure against ice damage and scouring action.

(122) Many prominent towers, tanks, smokestacks, buildings, and other similar structures, charted as landmarks, display flashing and/or fixed red aircraft obstruction lights. Lights shown from landmarks are charted only when they have distinctive characteristics to enable the mariner to positively identify the location of the charted structure.

**Articulated lights**

(123) An articulated light is a vertical pipe structure supported by a submerged buoyancy chamber and attached by a universal coupling to a weighted sinker on the seafloor. The light, allowed to move about by the universal coupling, is not as precise as a fixed aid. However, it has a much smaller watch circle than a conventional buoy, because the buoyancy chamber tends to force the pipe back to a vertical position when it heels over under the effects of wind, wave, or current.

(124) Articulated lights are primarily designed to mark narrow channels with greater precision than conventional buoys.

**Daybeacons**

(125) Daybeacons are unlighted aids affixed to stationary structures. They are marked with dayboards for daytime identification. The dayboards aid navigation by presenting one of several standard shapes and colors which have navigational significance. Dayboards are sometimes referred to as daymarks.

(126) Daybeacons are found on-shore and in shallow water. They are frequently used to mark channel edges.

**Articulated daybeacons**

(127) Articulated daybeacons are similar to articulated lights, described above, except they are unlighted.

**Buoys**

(128) The aids to navigation depicted on charts comprise a system consisting of fixed and floating aids with varying degrees of reliability. Therefore, prudent mariners will not rely solely on any single aid to navigation, particularly a floating aid.

(129) The approximate position of a buoy is represented by the dot or circle associated with the buoy symbol. The approximate position is used because of practical limitations in positioning and maintaining buoys and their sinkers in precise geographical locations. These limitations include, but are not limited to, inherent

imprecisions in position fixing methods, prevailing atmospheric and sea conditions, the slope of and the material making up the seabed, the fact that buoys are moored to sinkers by varying lengths of chain, and the fact that buoy body and/or sinker positions are not under continuous surveillance, but are normally checked only during periodic maintenance visits which often occur more than a year apart. The position of the buoy body can be expected to shift inside and outside of the charting symbol due to the forces of nature. The mariner is also cautioned that buoys are liable to be carried away, shifted, capsized, sunk, etc. Lighted buoys may be extinguished or sound signals may not function as a result of ice, running ice or other natural causes, collisions, or other accidents.

(130) For the foregoing reasons, a prudent mariner must not rely completely upon the charted position or operation of floating aids to navigation, but will also utilize bearings from fixed objects and aids to navigation on shore. Further, a vessel attempting to pass close aboard always risks collision with a yawing buoy or with the obstruction the buoy marks.

(131) Buoys may not always properly mark shoals or other obstructions due to shifting of the shoals or of the buoys. Buoys marking wrecks or other obstructions are usually placed on the seaward or channelward side and not directly over a wreck. Since buoys may be located some distance from a wreck they are intended to mark, and since sunken wrecks are not always static, extreme caution should be exercised when operating in the vicinity of such buoys.

### Bridge lights and clearance gages

(132) The Coast Guard regulates marine obstruction lights and clearance gages on bridges across navigable waters. Where installed, clearance gages are generally vertical numerical scales, reading from top to bottom, and show the actual vertical clearance between the existing water level and the lowest point of the bridge over the channel; the gages are normally on the right-hand pier or abutment of the bridge, on both the upstream and downstream sides.

(133) Bridge lights are fixed red or green, and are privately maintained; they are generally not charted or described in the text of the Coast Pilot. All bridge piers (and their protective fenders) and abutments which are in or adjacent to a navigation channel are marked on all channel sides by red lights. On each channel span of a fixed bridge, there is a range of two green lights marking the center of the channel and a red light marking both edges of the channel, except that when the margins of the channel are confined by bridge piers, the red lights on the span are omitted, since the pier lights then mark the channel edges; for multiplespan fixed bridges, the main-channel span may also be marked by three white lights in a vertical line above the green range lights.

(134) On all types of drawbridges, one or more red lights are shown from the drawspan (higher than the pier lights) when the span is closed; when the span is open, the higher red lights are obscured and one or two green lights are shown from the drawspan, higher than the pier lights. The number and location of the red and green lights depend upon the type of drawbridge.

(135) Bridges and their lighting, construction and maintenance are set forth in **33 CFR 114, 115, 116, and 118**, (not carried in this Coast Pilot). Aircraft obstruction lights prescribed by the Federal Aviation Administration may operate at certain bridges.

### Sound signals

(136) Caution should be exercised in the use of sound signals for navigation purposes. They should be considered solely as warning devices.

(137) Sound travels through the air in a variable manner, even without the effects of wind; and, therefore, the hearing of sound signals cannot be implicitly relied upon.

(138) Experience indicates that distances must not be judged only by the intensity of the sound; that occasionally there may be areas close to a sound signal in which it is not heard; and that fog may exist not far from a station, yet not be seen from it, so the signal may not be operating. It is not always possible to start a sound signal immediately when fog is observed.

### Caution, channel markers

(139) Lights, daybeacons, and buoys along dredged channels do not always mark the bottom edges. Due to local conditions, aids may be located inside or outside the channel limits shown by dashed lines on a chart. The Light List tabulates the offset distances for these aids in many instances.

(140) Aids may be moved, discontinued, or replaced by other types to facilitate dredging operations. Mariners should exercise caution when navigating areas where dredges with auxiliary equipment are working.

(141) Temporary changes in aids are not included on the charts.

### Light Lists

(142) Light Lists, published by the Coast Guard, describe aids to navigation, consisting of lights, sound signals, buoys, daybeacons, and electronic aids, in United States (including Puerto Rico and U.S. Virgin Islands) and contiguous Canadian waters. Light Lists are for sale by the Government Printing Office (see Appendix A for address) and by sales agents in the principal seaports. Light Lists are also available at http://www.navcen.uscg.gov/. Mariners should refer to these publications for detailed information regarding the characteristics and visibility of lights, and the descriptions of light structures, buoys, sound signals, and electronic aids.

## ELECTRONIC POSITIONING SYSTEMS

(143) **Global Positioning System (GPS)** permits land, sea, and airborne users to determine their three dimensional position, velocity, and time, 24 hours a day in all weather, anywhere in the world. The basic system is defined as a constellation of satellites, the navigation payloads which produce the GPS signals, ground stations, data links, and associated command and control facilities which are operated and maintained by the Department of Defense. Please report GPS problems or anomalies at http://www.navcen.uscg.gov/ or contact the USCG Navigation Information Service at 703-313-5900.

(144) The U.S. Coast Guard Navigation Center (NAVCEN) operates the Coast Guard Maritime **Differential GPS (DGPS)** Service. The Service broadcasts correction signals on marine radiobeacon frequencies to improve the accuracy of and integrity to GPS-derived positions. Typically, the positional error of a DGPS position is 1 to 3 meters, greatly enhancing harbor entrance and approach navigation. The System provides service for coastal coverage of the continental U.S., the Great Lakes, Puerto Rico, portions of Alaska and Hawaii, and a greater part of the Mississippi River Basin.

(145) **Wide Area Augmentation System (WAAS)** employs ground based master and reference stations to measure variations in GPS satellite signals. These measurements are sent to WAAS satellites that broadcast the correction messages back to Earth, for improved position accuracy on WAAS-enabled GPS receivers.

### LORAN-C

(146) LORAN, an acronym for LOng RAnge Navigation, was an electronic aid to navigation consisting of shore-based radio transmitters. In accordance with the DHS Appropriations Act, the U.S. Coast Guard has terminated the transmission of all LORAN-C signals as of August 2010, rendering them unusable and permanently discontinued. For more details, view http://www.navcen.uscg.gov/. The Coast Guard strongly urges mariners accustomed to using LORAN-C for navigation to shift to a GPS navigation system and become familiar with its operation. NOAA is removing LORAN-C lines of position from all of its charts as new editions are published.

## DISTRESS: COMMUNICATION PROCEDURES

### Coast Guard search and rescue operations

(147) The Coast Guard conducts and/or coordinates search and rescue operations for surface vessels or aircraft that are in distress or overdue. Search and Rescue vessels and aircraft have special markings, including a wide slash of red-orange and a small slash of blue on the forward portion of the hull or fuselage. Other parts of aircraft, normally painted white, may have other areas painted red to facilitate observation. The cooperation of vessel operators with Coast Guard helicopters, fixed-wing aircraft, and vessels may mean the difference between life and death for some seaman or aviator; such cooperation is greatly facilitated by the prior knowledge on the part of vessel operators of the operational requirements of Coast Guard equipment and personnel, of the international distress signals and procedures, and of good seamanship.

(148) **Note:** Distress and other calls to Coast Guard communication stations may be made on any of the following HF single sideband radiotelephone channels: 4125 kHz, 6215 kHz, 8291 kHz, or 12290 kHz.

### International distress signals

(149) (1) A signal made by radiotelegraphy or by any other signaling method consisting of the group "SOS" in Morse Code.

(150) (2) A signal sent by radiotelephony consisting of the spoken word "MAYDAY."

(151) (3) The International Flag Code Signal of NC.

(152) (4) A signal consisting of a square flag having above or below it a ball or anything resembling a ball.

(153) (5) Flames on the craft (as from a burning oil barrel, etc.)

(154) (6) A rocket parachute flare or hand flare showing a red light.

(155) (7) Rockets or shells, throwing red stars fired one at a time at short intervals.

(156) (8) Orange smoke, as emitted from a distress flare.

(157) (9) Slowly and repeatedly raising and lowering arms outstretched to each side.

(158) (10) A gun or other explosive signal fired at intervals of about 1 minute.

(159) (11) A continuous sounding of any fog-signal apparatus.

(160) (12) The radiotelegraph alarm signal.

(161) (13) The radiotelephone alarm signal.

(162) (14) Signals transmitted by emergency position-indicating radiobeacons.

(163) (15) A piece of orange-colored canvas with either a black square and circle or other appropriate symbol (for identification from the air).

(164) (16) A dye marker.

### Radio distress procedures

(165) Distress calls are made on 2182 kHz or VHF-FM channel 16 (MAYDAY). For less serious situations than warrant the distress procedure, the urgency signal PAN-PAN (PAHN-PAHN, spoken three times), or the safety signal SECURITY (SAY-CURITAY, spoken three times), for radiotelephony, are used as appropriate. Since urgent and safety situations are less critical, only the distress procedures for voice radiotelephone are described. For complete information on emergency radio procedures, see **47 CFR 80** or NGA Pub. 117. Complete information on distress guards can be obtained from Coast Guard District Commanders.

(166) Distress calls indicate a vessel or aircraft is threatened by grave and imminent danger and requests immediate assistance. They have absolute priority over all other transmissions. All stations which hear a distress call must immediately cease any transmission capable of interfering with the distress traffic and shall continue to listen on the frequency used for the emission of the distress call. This call shall not be addressed to a particular station, and acknowledgment of receipt shall not be given before the distress message which follows it is sent.

**Radiotelephone distress communications**

(167) (1) The **radiotelephone alarm signal** (if available): The signal consists of two audio tones, of different pitch, transmitted alternately; its purpose is to attract the attention of persons on radio watch or to actuate automatic alarm devices. It may only be used to announce that a distress call or message is about to follow.

(168) (2) The **distress call**, consisting of:–

(169) the distress signal MAYDAY (spoken three times);

(170) the words THIS IS (spoken once);

(171) the call sign or name of the vessel in distress (spoken three times).

(172) (3) The **distress message** follows immediately and consists of:

(173) the distress signal MAYDAY;

(174) the call sign and name of the vessel in distress;

(175) particulars of its position (latitude and longitude, or true bearing and distance from a known geographical position);

(176) the nature of the distress;

(177) the kind of assistance desired;

(178) the number of persons aboard and the condition of any injured;

(179) present seaworthiness of vessel;

(180) description of the vessel (length; type; cabin; masts; power; color of hull, superstructure, trim; etc.);

(181) any other information which might facilitate the rescue, such as display of a surface-to-air identification signal or a radar reflector;

(182) your listening frequency and schedule;

(183) THIS IS (call sign and name of vessel in distress) OVER.

(184) (4) **Acknowledgment of receipt of a distress message:** If a distress message is received from a vessel which is definitely in your vicinity, immediately acknowledge receipt. If it is not in your vicinity, allow a short interval of time to elapse before acknowledging, in order to allow vessels nearer to the vessel in distress to acknowledge receipt without interference. However, in areas where reliable communications with one or more shore stations are practicable, all vessels may defer this acknowledgment for a short interval so that a shore station may acknowledge receipt first. The acknowledgment of receipt of a distress is given as follows:

(185) the call sign or name of the vessel sending the distress (spoken three times);

(186) the words THIS IS;

(187) the call sign or name of acknowledging vessel (spoken three times);

(188) The words RECEIVED MAYDAY.

(189) After the above acknowledgment, allow a momentary interval of listening to insure that you will not interfere with another vessel better situated to render immediate assistance; if not, with the authority of the person in charge of the vessel, transmit:

(190) the word MAYDAY;

(191) the call sign and name of distressed vessel;

(192) the words THIS IS;

(193) the call sign and name of your vessel;

(194) your position (latitude and longitude, or true bearing and distance from a known geographical position);

(195) the speed you are proceeding towards, and the approximate time it will take to reach, the distressed vessel. OVER.

(196) (5) **Further distress messages and other communications:** Distress communications consist of all messages relating to the immediate assistance required by the distressed vessel. Each distress communication shall be preceded by the signal MAYDAY. The vessel in distress or the station in control of distress communications may **impose silence** on any station which interferes. The procedure is:–the words SEELONCE MAYDAY (Seelonce is French for silence). Silence also may be imposed by nearby mobile stations other than the vessel in distress or the station in control of distress communications. The mobile station which believes that silence is essential may request silence by the following procedure:–the word SEELONCE, followed by the word DISTRESS, and its **own** call sign.

(197) (6) **Transmission of the distress procedure by a vessel or shore station not itself in distress:** A vessel or a shore station which learns that a vessel is in distress shall transmit a distress message in any of the following cases:

(198) (a) When the vessel in distress is not itself able to transmit the distress message.

(199) (b) When a vessel or a shore station considers that further help is necessary.

(200) (c) When, although not in a position to render assistance, it has heard a distress message that has not been acknowledged.

(201) In these cases, the transmission shall consist of:

(202) the radiotelephone alarm signal (if available);

(203) the words MAYDAY RELAY (spoken three times);

(204) the words THIS IS;

(205) the call sign and name of vessel (or shore station), spoken three times.

(206) When a vessel transmits a distress under these conditions, it shall take all necessary steps to contact the Coast Guard or a shore station which can notify the Coast Guard.

(207) (7) **Termination of distress:** When distress traffic has ceased, or when silence is no longer necessary on the frequency used for the distress traffic, the station in

control shall transmit on that frequency a message to all stations as follows:

(208) the distress signal MAYDAY;

(209) the call TO ALL STATIONS, spoken three times;

(210) the words THIS IS;

(211) the call sign and name of the station sending the message;

(212) the time;

(213) the name and call sign of the vessel in distress;

(214) the words SEELONCE FEENEE (French for silence finished).

### Optimize Radar Profile

(215) Operators of disabled wooden craft and persons adrift in rubber rafts or boats that are, or may consider themselves to be, the object of a search, should hoist on a halyard or otherwise place aloft as high as possible any metallic object that would assist their detection by radar. Coast Guard cutters and aircraft are radar equipped and thus are able to continue searching in darkness and during other periods of low visibility. It is advisable for coastal fishing boats, yachts, and other small craft to have efficient radar reflectors permanently installed aboard the vessel.

### File cruising schedules

(216) Small-craft operators should prepare a cruising plan before starting on extended trips and leave it ashore with a yacht club, marina, friend, or relative. It is advisable to use a checking-in procedure by telephone for each point specified in the cruising plan. Such a trip schedule is vital for determining if a boat is overdue and will assist materially in locating a missing craft in the event search and rescue operations become necessary.

## DISTRESS: ASSISTANCE PROCEDURES

### Surface ship procedures for assisting distressed surface vessels

(217) (1) The following immediate action should be taken by each ship on receipt of a distress message:

(218) (a) Acknowledge receipt and, if appropriate, retransmit the distress message;

(219) (b) Immediately try to take D/F bearings during the transmission of the distress message and maintain a D/F watch on 2182 kHz;

(220) (c) Communicate the following information to the ship in distress:

(221) (i) identity;

(222) (ii) position;

(223) (iii) speed and estimated time of arrival (ETA);

(224) (iv) when available, true bearing of the ship in distress.

(225) (d) Maintain a continuous listening watch on the frequency used for the distress. This will normally be:

(226) (i) 2182 kHz (radiotelephone).

(227) (e) Additionally, maintain watch on VHF-FM channel 16 as necessary;

(228) (f) Operate radar continuously;

(229) (g) If in the vicinity of the distress, post extra lookouts.

(230) (2) The following action should be taken when proceeding to the area of distress:

(231) (a) Plot the position, course, speed, and ETA of other assisting ships.

(232) (b) Attempt to construct an accurate "picture" of the circumstances attending the casualty. The important information needed is included under Distress Signals and Communication Procedures, this chapter. Should the ship in distress fail to transmit this information, a ship proceeding to assist should request what information is needed.

(233) (3) The following on-board preparation while proceeding to the distress area should be considered:

(234) (a) A rope (guest warp) running from bow to quarter at the waterline on each side and secured by lizards to the ship's side to assist boats and rafts to secure alongside;

(235) (b) A derrick rigged ready for hoisting on each side of the ship with a platform cargo sling, or rope net, secured to the runner to assist the speedy recovery of exhausted or injured survivors in the water;

(236) (c) Heaving lines, ladders, and scramble net placed ready for use along both sides of the ship on the lowest open deck and possibly crew members suitably equipped to enter the water and assist survivors;

(237) (d) A ship's liferaft made ready for possible use as a boarding station;

(238) (e) Preparations to receive survivors who require medical assistance including the provision of stretchers;

(239) (f) When own lifeboat is to be launched, any means to provide communications between it and the parent ship will prove to be of very great help;

(240) (g) A line throwing appliance with a light line and a heavy rope, ready to be used for making connection either with the ship in distress or with survival craft.

### Aircraft procedures for directing surface craft to scene of distress incident

(241) The following procedures performed in sequence by an aircraft mean that the aircraft is directing a surface craft toward the scene of a distress incident,

(242) (a) Circling the surface craft at least once.

(243) (b) Crossing the projected course of the surface craft close ahead at low altitude, rocking the wings, opening and closing the throttle, or changing the propeller pitch.

(244) (c) Heading in the direction in which the surface craft is to be directed. The surface craft should acknowledge the signal by changing course and following the aircraft. If, for any reason, it is impossible to follow, the surface craft should hoist the international code flag

NOVEMBER, or use any other signaling means available to indicate this.

(245) The following procedures performed by an aircraft mean that the assistance of the surface craft is no longer required:

(246) (a) Crossing the wake of the surface craft close astern at a low altitude, rocking the wings, opening and closing the throttle or changing the propeller pitch.

(247) Since modern jet-engined aircraft cannot make the characteristic sound associated with opening and closing the throttle, or changing propeller pitch, ships should be alert to respond to the signals without the sounds, when jets or turboprop aircraft are involved.

**Surface ship procedures for assisting aircraft in distress**

(248) 1. When an aircraft transmits a distress message by radio, the first transmission is generally made on the designated air/ground enroute frequency in use at the time between the aircraft and aeronautical station. The aircraft may change to another frequency, possibly another enroute frequency or the aeronautical emergency frequencies of 121.50 MHz or 243 MHz. In an emergency, it may use any other available frequency to establish contact with any land or mobile station.

(249) 2. There is liaison between Coast Radio Stations aeronautical units, and land–based search and rescue organizations. Merchant ships will ordinarily be informed of aircraft casualties at sea by broadcast messages from Coast Radio Stations, made on the international distress frequency of 2182 kHz. Ships may, however, become aware of the casualty by receiving:

(250) (a) An SOS message from an aircraft in distress which is able to transmit on radiotelephone on 2182 kHz.

(251) (b) A message from a SAR aircraft.

(252) 3. For the purpose of emergency communications with aircraft, special attention is called to the possibility of conducting direct communications on 2182 kHz, if both ship and aircraft are so equipped.

(253) 4. An aircraft in distress will use any means at its disposal to attract attention, make known its position, and obtain help, including some of the signals prescribed by the applicable Navigation Rules.

(254) 5. Aircraft usually sink quickly (e.g. within a few minutes). Every endeavor will be made to give ships an accurate position of an aircraft which desires to ditch. When given such a position, a ship should at once consult any other ships in the vicinity on the best procedure to be adopted. The ship going to the rescue should answer the station sending the broadcast and give her identity, position, and intended action.

(255) 6. If a ship should receive a distress message direct from an aircraft, she should act as indicated in the immediately preceding paragraph and also relay the message to the nearest Coast Radio Station. Moreover, a ship which has received a distress message direct from an aircraft and is going to the rescue should take a bearing on the transmission and inform the Coast Radio Station and other ships in the vicinity of the call sign of the distressed aircraft and the time at which the distress message was received, followed by the bearing and time at which the signal ceased.

(256) 7. When an aircraft decides to ditch in the vicinity of a ship, the ship should:

(257) (a) Transmit homing bearings to the aircraft, or (if so required) transmit signals enabling the aircraft to take its own bearings.

(258) (b) By day, make black smoke.

(259) (c) By night, direct a searchlight vertically and turn on all deck lights. Care must be taken not to direct a searchlight toward the aircraft, which might dazzle the pilot.

(260) 8. Ditching an aircraft is difficult and dangerous. A ship which knows that an aircraft intends to ditch should be prepared to give the pilot the following information:

(261) (a) Wind direction and force.

(262) (b) Direction, height, and length of primary and secondary swell systems.

(263) (c) Other pertinent weather information.

(264) The pilot of an aircraft will choose his own ditching heading. If this is known by the ship, she should set course parallel to the ditching heading. Otherwise the ship should set course parallel to the main swell system and into the wind component, if any.

(265) 9. A land plane may break up immediately on striking the water, and liferafts may be damaged. The ship should, therefore, have a lifeboat ready for launching, and if possible, boarding nets should be lowered from the ship and heaving lines made ready in the ship and the lifeboat. Survivors of the aircraft may have bright colored lifejackets and location aids.

(266) 10. The method of recovering survivors must be left to the judgment of the master of the ship carrying out the rescue operation.

(267) 11. It should be borne in mind that military aircraft are often fitted with ejection seat mechanisms. Normally, their aircrew will use their ejection seats, rather than ditch. Should such an aircraft ditch, rather than the aircrew bail out, and it becomes necessary to remove them from their ejection seats while still in the aircraft, care should be taken to avoid triggering off the seat mechanisms. The activating handles are invariably indicated by red and or black/yellow coloring.

(268) 12. A survivor from an aircraft casualty who is recovered may be able to give information which will assist in the rescue of other survivors. Masters are therefore asked to put the following questions to survivors and to communicate the answers to a Coast Radio Station. They should also give the position of the rescuing ship and the time when the survivors were recovered.

(269) (a) What was the time and date of the casualty?

(270) (b) Did you bail out or was the aircraft ditched?

(271) (c) If you bailed out, at what altitude?

(272) (d) How many others did you see leave the aircraft by parachute?

(273) (e) How many ditched with the aircraft?

(274) (f) How many did you see leave the aircraft after ditching?

(275) (g) How many survivors did you see in the water?

(276) (h) What flotation gear had they?

(277) (i) What was the total number of persons aboard the aircraft prior to the accident?

(278) (j) What caused the emergency?

**Helicopter evacuation of personnel**

(279) Helicopter evacuation, usually performed by the Coast Guard, is a hazardous operation to the patient and to the flight crew, and should only be attempted in event of very serious illness or injury. Provide the doctor on shore with all the information you can concerning the patient, so that an intelligent evaluation can be made concerning the need for evacuation. Most rescue helicopters can proceed less than 150 miles offshore (a few new helicopters can travel 250 to 300 miles out to sea), dependent on weather conditions and other variables. If an evacuation is necessary, the vessel must be prepared to proceed within range of the helicopter, and should be familiar with the preparations which are necessary prior to and after its arrival.

(280) **When requesting helicopter assistance:**

(281) (1) Give the accurate position, time, speed, course, weather conditions, sea conditions, wind direction and velocity, type of vessel, and voice and CW frequency for your ship.

(282) (2) If not already provided, give complete medical information including whether or not the patient is ambulatory.

(283) (3) If you are beyond helicopter range, advise your diversion intentions so that a rendezvous point may be selected.

(284) (4) If there are changes to any items reported earlier, advise the rescue agency immediately. Should the patient die before the arrival of the helicopter, be sure to advise those assisting you.

(285) **Preparations prior to the arrival of the helicopter:**

(286) (1) Provide continuous radio guard on 2182 kHz or specified voice frequency, if possible. The helicopter normally cannot operate CW.

(287) (2) Select and clear the most suitable hoist area, preferably aft on the vessel with a minimum of 50 feet (15.2 meters) radius of clear deck. This must include the securing of loose gear, awnings, and antenna wires. Trice up running rigging and booms. If hoist is aft, lower the flag staff.

(288) (3) If the hoist is to take place at night, light the pickup areas as well as possible. Be sure you do not shine any lights on the helicopter, so that the pilot is not blinded. If there are any obstructions in the vicinity, put a light on them so the pilot will be aware of their positions.

(289) (4) Point searchlight vertically to aid the flight crew in locating the ship and turn them off when the helicopter is on the scene.

(290) (5) Be sure to advise the helicopter of the location of the pickup area on the ship before the helicopter arrives, so that the pilot may make his approach to aft, amidships, or forward, as required.

(291) (6) There will be a high noise level under the helicopter, so voice communications on deck are almost impossible. Arrange a set of hand signals among the crew who will assist.

(292) **Hoist operations:**

(293) (1) If possible, have the patient moved to a position as close to the hoist area as his condition will permit– **time is important.**

(294) (2) Normally, if a litter (stretcher) is required, it will be necessary to move the patient to the special litter which will be lowered by the helicopter. Be prepared to do this as quickly as possible. Be sure the patient is strapped in, face up, and with a life jacket on (if his condition will permit).

(295) (3) Be sure that the patient is tagged to indicate what medication, if any, was administered to him and when it was administered.

(296) (4) Have patient's medical record and necessary papers in an envelope or package ready for transfer with the patient.

(297) (5) Again, if the patient's condition permits, be sure he is wearing a life jacket.

(298) (6) Change the vessel's course to permit the ship to ride as easily as possible with the wind on the bow, preferably on the port bow. Try to choose a course to keep the stack gases clear of the hoist area. Once established, maintain course and speed.

(299) (7) Reduce speed to ease ship's motion, but maintain steerageway.

(300) (8) If you do not have radio contact with the helicopter, when you are in all respects ready for the hoist, signal the helicopter in with a "come on" with your hand, or at night by flashlight signals.

(301) (9) **Allow basket or stretcher to touch deck prior to handling to avoid static shock.**

(302) (10) If a trail line is dropped by the helicopter, guide the basket or stretcher to the deck with the line; keep the line free at all times. This line will not cause shock.

(303) (11) Place the patient in basket, sitting with his hands clear of the sides, or in the litter, as described above. Signal the helicopter hoist operator when ready for the hoist. Patient should signal by a nodding of the head if he is able. Deck personnel give thumbs up.

(304) (12) If it is necessary to take the litter away from the hoist point, unhook the hoist cable and keep it free for the helicopter to haul in. **Do not secure cable or trail line to the vessel or attempt to move stretcher without unhooking.**

(305) (13) When patient is strapped into the stretcher, signal the helicopter to lower the cable, attach cable to stretcher sling (bridle), then signal the hoist operator

when the patient is ready to hoist. Steady the stretcher so it will not swing or turn.

(306) (14) If a trail line is attached to the basket or stretcher, use it to steady the patient as he is hoisted. Keep your feet clear of the line, and keep the line from becoming entangled.

### Medical advice and/or evacuation

(307) In the event a master of a vessel requires medical advice and/or there is a potential of evacuation the following should be volunteered by the master:

(308) Vessel's name and call sign.

(309) Vessel's position and time at position.

(310) Vessel's course, speed and next port and estimated time of arrival (ETA).

(311) Patient's name, nationality, age, race and sex.

(312) Patient's respiration, pulse and temperature.

(313) Patient's symptoms and nature of illness.

(314) Any known history of similar illness.

(315) Location and type of pain.

(316) Medical supplies carried on board vessel.

(317) Medication given to patient.

(318) Weather.

(319) Communication schedule and frequency.

### Coast Guard droppable, floatable pumps

(320) The Coast Guard often provides vessels in distress with emergency pumps by either making parachute drops, by lowering on helicopter hoist, or by delivering by vessel. The most commonly used type of pump comes complete in a sealed aluminum drum about half the size of a 50-gallon oil drum. One single lever on top opens it up. Smoking is cautioned against due to the possible presence of gas fumes inside the can. The pump will draw about 90 gallons per minute. There should be a waterproof flashlight on top of the pump for night use. Operating instructions are provided inside the pump container.

(321) **Preparations for being towed by Coast Guard:**

(322) (1) Clear the forecastle area as well as you can.

(323) (2) If a line-throwing gun is used, keep everyone out of the way until line clears the boat. The Coast Guard vessel will blow a police whistle or otherwise warn you before firing.

(324) (3) Have material ready for chafing gear.

### Medical advice

(325) Free medical advice is furnished to seamen by radio through the cooperation of Governmental and commercial radio stations whose operators receive and relay messages prefixed **RADIOMEDICAL** from ships at sea to the U.S. Coast Guard and/or directly to a hospital and then radio the medical advice back to the ships. (See Appendix A for list of radio stations that provide this service.)

## EMERGENCY POSITION INDICATING RADIOBEACONS (EPIRB)

(326) Emergency Position Indicating Radiobeacons (EPIRBs), are designed to save your life if you get into trouble by alerting rescue authorities and indicating your location. EPIRB types are described in the accompanying table.

**EPIRB Types**

| Type | Frequency | Description |
|---|---|---|
| Cat I | 406 MHz | Float-free, automatically activated EPIRB. Detectable by satellite anywhere in the world. Recognized by the Global Maritime and Distress Safety System (GMDSS). |
| Cat II | 406 MHz | Similar to Category I, except is manually activated. Some models are also water activated. |

(327) **406 MHz EPIRBs (Category I, II):** The 406 MHz EPIRB was designed to operate with satellites. The signal frequency (406 MHz) has been designated internationally to be used only for distress. Other communications and interference are not allowed on this frequency. Its signal allows a satellite local user terminal to accurately locate the EPIRB and identify the vessel (the signal is encoded with the vessel's identity) anywhere in the world (there is no range limitation). These devices are detectable not only by COSPAS-SARSAT satellites which are polar orbiting, but also by geostationary GOES weather satellites. EPIRBs detected by the GEOSAR system, consisting of GOES and other geostationary satellites, send rescue authorities an instant alert, but without location information unless the EPIRB is equipped with an integral GPS receiver. EPIRBs detected by COSPAS-SARSAT (e.g. TIROS N) satellites provide rescue authorities location of distress, but location and sometimes alerting may be delayed as much as an hour or two. These EPIRBs also include a 121.5 MHz homing signal, allowing aircraft and rescue craft to quickly find the vessel in distress. These are the only type of EPIRB which must be certified by Coast Guard approved independent laboratories before they can be sold in the United States.

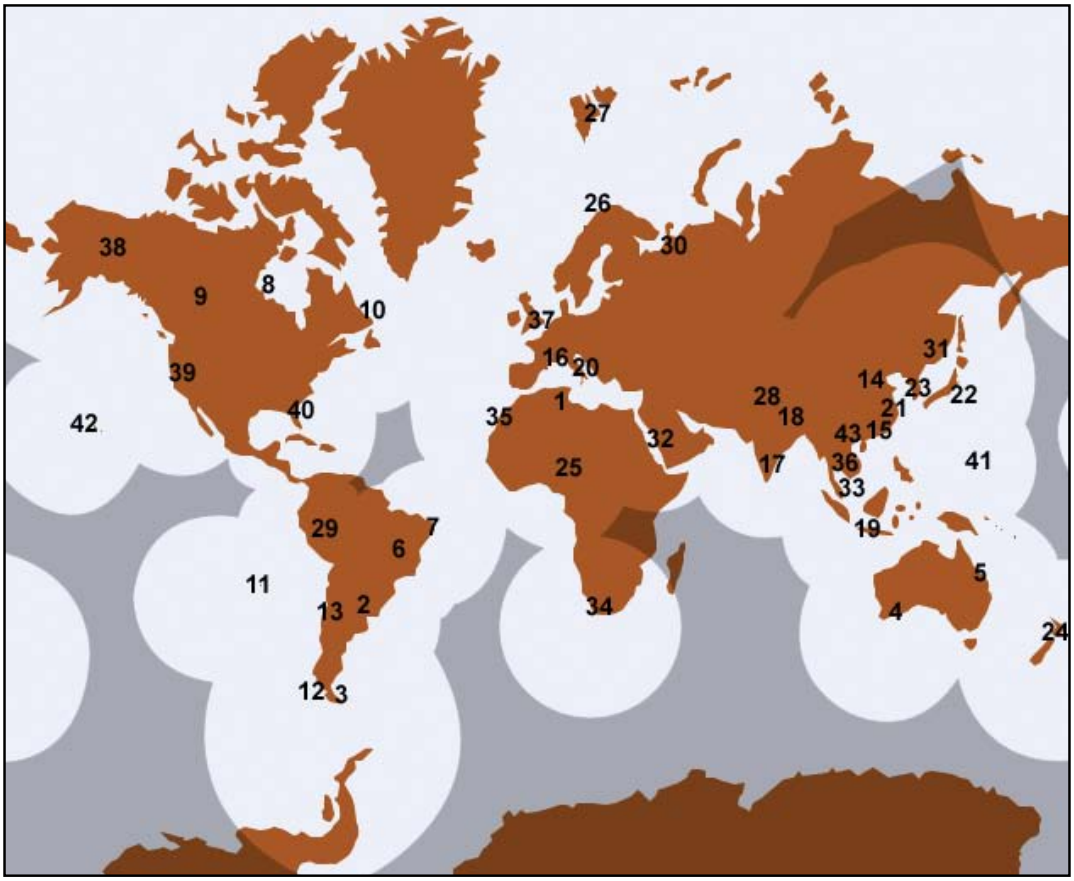
(328) A new type of 406 MHz EPIRB, having an integral GPS navigation receiver, became available in 1998. This EPIRB will send accurate location as well as identification information to rescue authorities immediately upon activation through both geostationary (GEOSAR) and polar orbiting satellites. These types of EPIRB are the best you can buy.

(329) 406 MHz emergency locating transmitters (ELTs) for aircraft are currently available and 406 MHz personnel locating beacons (PLBs) are also available.

(330) The Coast Guard recommends you purchase a 406 MHz EPIRB, preferably one with an integral GPS navigation receiver. A Cat I EPIRB should be purchased if it can be installed properly.

(331) Proper registration of your 406 MHz EPIRB is intended to save your life, and is mandated by Federal

## Areas of Coverage for the Cospas-Sarsat Low-altitude Earth Orbit System for Search and Rescue (LEOSAR)




| | | | | | |
|---|---|---|---|---|---|
| 1 | Ouargla, Algeria | 15 | Hong Kong, China | 29 | Callao, Peru |
| 2 | Parana, Argentina | 16 | Toulouse, France | 30 | Arkhangelsk, Russia |
| 3 | Rio Grande, Argentina | 17 | Bangalore, India | 31 | Nakhodka, Russia |
| 4 | Albany, Australia | 18 | Lucknow, India | 32 | Jeddah, Saudi Arabia |
| 5 | Bundaberg, Australia | 19 | Jakarta, Indonesia | 33 | Singapore |
| 6 | Brasilia, Brazil | 20 | Bari, Italy | 34 | Cape Town, South Africa |
| 7 | Recife, Brazil | 21 | Keelung, ITDC | 35 | Maspalomas, Spain |
| 8 | Churchill, Canada | 22 | Yokohama, Japan | 36 | Bangkok, Thailand |
| 9 | Edmonton, Canada | 23 | Daejeon, Korea | 37 | Combe Martin, UK |
| 10 | Goose Bay, Canada | 24 | Wellington, New Zealand | 38 | Alaska, USA |
| 11 | Easter Island, Chile | 25 | Abuja, Nigeria | 39 | California, USA |
| 12 | Punta Arenas, Chile | 26 | Tromsoe, Norway | 40 | Florida, USA |
| 12 | Santiago, Chile | 27 | Spitsbergen, Norway | 41 | Guam |
| 14 | Beijing, China | 28 | Lahore, Pakistan | 42 | Hawaii, USA |
| | | | | 43 | Haiphong, Vietnam |

Communications Commission regulations; the Coast Guard is enforcing this FCC registration rule.

(332) If you purchase a new or a used 406 MHz EPIRB, you MUST register it with NOAA. If you change your boat, your address, or your primary phone number, you MUST re-register your EPIRB with NOAA. If you sell your EPIRB, make sure the purchaser re-registers the EPIRB, or you may be called by the Coast Guard if it later becomes activated. An FCC ship station license is no longer required to purchase or carry an EPIRB. Download or request 406 MHz EPIRB registration forms from http://www.sarsat.noaa.gov/beacon.html, and mail or fax completed forms to:

(333) Beacon Registration
(334) NOAA/NESDIS
(335) NSOF, E/SP3
(336) 4231 Suitland Road
(337) Suitland, MD 20746
(338) (fax: 301-817-4565)

(339) or call toll free at **1-888-212-SAVE** (1-888-212-7283) for further information or a copy of the registration form. From outside the U.S., call: 1-301-457-5430 or fax: 301-568-8649 for further information. Forms may be requested by phone or fax, or downloaded by computer (above). There is no charge for this service. IT MAY SAVE YOUR LIFE.

### The COSPAS-SARSAT system

(340) COSPAS: Space System for Search of Distress Vessels (a Russian acronym); SARSAT: Search and Rescue Satellite-Aided Tracking. COSPAS-SARSAT is an international satellite system designed to provide distress alert and location data to assist search and rescue (SAR) operations, using satellites and ground facilities to detect and locate the signals of distress beacons operating on 121.5 and 406 MHz (Megahertz). The system provides distress alert and location data to Rescue Coordination Centers for 121.5 MHz beacons within the coverage area of ground stations (Local User Terminals–LUTs), and for 406 MHz beacons activated anywhere in the world. The goal of the system is to support all organizations in the world with responsibility for SAR operations.

### Testing EPIRBs

(341) The Coast Guard urges those owning EPIRBs to periodically examine them for water tightness, battery expiration date and signal presence. FCC rules allow Class A, B, and S EPIRBs to be turned on briefly (for three audio sweeps, or one second only) during the first five minutes of each hour. Signal presence can be detected by an FM radio tuned to 99.5 MHz, or an AM radio tuned to any vacant frequency and located close to an EPIRB. 406 MHz EPIRBs can be tested through its self-test function, which is an integral part of the device.

(342) **Radar beacons (RACONS)** are low-powered radio transceivers that operate in the marine radar X-band frequencies. When activated by a vessel's radar signal, **Racons** provide a distinctive visible display on the vessel's radarscope from which the range and bearing to the beacon may be determined. (See Light List and NGA Pub. 117 for details.)

## RADIO: NAVIGATION WARNINGS, INFORMATION AND WEATHER

(343) Marine radio warnings and weather are disseminated by many sources and through several types of transmissions. U.S. Coast Guard NAVTEX, high-frequency (HF) narrow-band direct printing (radio telex), HF radiofacsimile, and radiotelephone broadcasts of maritime safety information are summarized here. (For complete information on radio warnings and weather see NGA Pub. 117 and the National Weather Service publication **Worldwide Marine Radiofacsimile Broadcast Schedules**.)

### Coast Guard radio stations

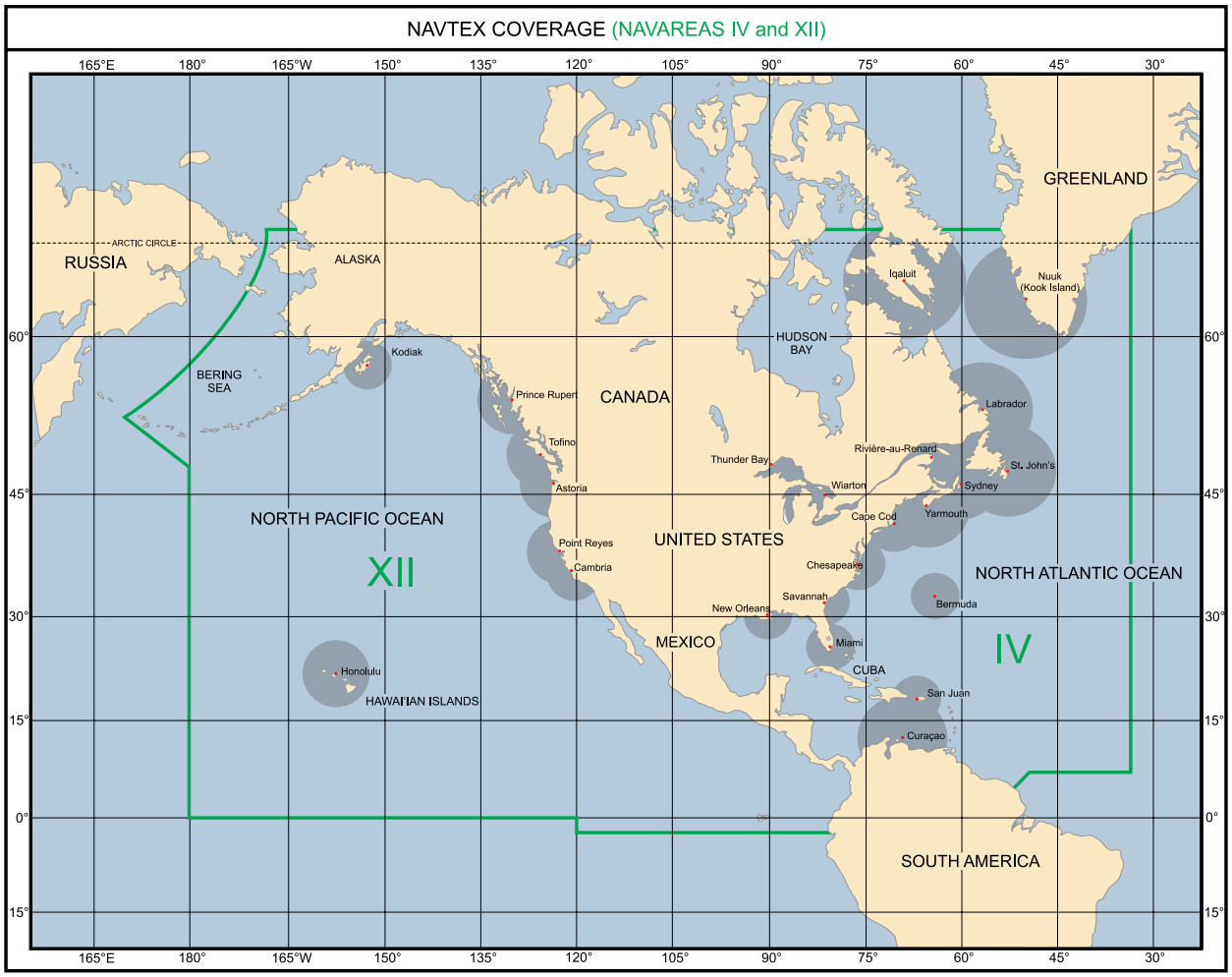
(344) The Coast Guard maintains an extensive network of telecommunications facilities to meet its internal needs and to provide the maritime public with the capability of contacting the Coast Guard for any purpose such as distress and safety, maritime security, maritime environmental issues, and other purposes. These facilities permit the Coast Guard to meet its statutory responsibilities to provide or assist in providing the maritime public with information to include weather and Notices to Mariners.

(345) Generally, Coast Guard telecommunications facilities can be divided into two classes. Long range facilities are located near Boston, MA, Chesapeake, VA, Miami, FL, New Orleans, LA, San Francisco, CA, Honolulu, HI, Kodiak, AK and Guam, Mariana Islands. Most of these sites are remotely controlled by two master stations located at the stations near Chesapeake and San Francisco. These sites enable the Coast Guard to provide a full range of telecommunications services to include Digital Selective Calling (DSC), NAVTEX, Facsimile (Fax), Voice, SITOR, and others services using the high frequency and medium frequency bands.

(346) Modern short range telecommunications facilities provide near continuous VHF Band (156-162 MHz) and medium frequency (2182 kHz) coverage of the coastline of the lower 48 United States and more limited coverage of Hawaii, Alaska, Puerto Rico, and the U.S. Virgin Islands. Construction is ongoing to rebuild and expand coverage in Hawaii and Alaska. These sites provide the maritime public with distress and safety services and also broadcast maritime weather, Notices to Mariners, and similar services within approximately 20 miles of the coastline using voice and DSC means.

(347) Detailed information regarding radio frequencies use, broadcast schedules, and other important information is available at www.navcen.uscg.gov.

(348) Coast Guard long range sites may be contacted by voice on 4125, 6215, 8291 or 12290 kHz. The contacted




station answers on the same frequency. The long range sites share responsibility for guarding these frequencies; however, mariners will nearly always be within the coverage area of more than one site. Coast Guard long range sites also maintain a DSC guard on 2187.5, 4207.5, 6312, 8414.5, 12577 and 16804.5 kHz. Each site has an individual Maritime Mobile Service Identity (MMSI) as outlined on the NAVCEN website. However, all can be contacted by using the CG universal MMSI of 003669999.

(349) Maritime weather and other maritime related information are broadcast via NAVTEX on 518 kHz with six scheduled broadcasts each day from sites near Boston, Chesapeake, Charleston, Miami, San Juan, New Orleans, Cambria, San Francisco, Astoria, Kodiak, Honolulu, and Guam.

(350) Facsimile weather charts are broadcast from sites near Boston on 4235, 6340.5, 9110 and 12750 kHz, New Orleans 4317.9, 8503.9, 12789.9 and 17146.4 kHz, San Francisco 4346, 8684, 17151.2 and 22527 kHz, and Kodiak 2054, 4298, 8459 and 12412.5 kHz.

(351) HF Narrow Band Direct Printing (SITOR) are broadcast from sites near Boston 6314, 8416.5, 12579 and 16806.5 kHz, San Francisco 8416.5 and 16805.5 kHz, Honolulu 8416.5, 12579 and 22376 kHz, and Guam 12579, 16806.5 and 22376 kHz.

(352) HF Voice broadcasts are made from sites located near Norfolk 4426, 6501, 8734, 13089 and 17314 kHz, New Orleans 4316, 8502 and 12788 kHz, San Francisco 6501 kHz, Honolulu 6501, 8764 and 13089 kHz, and Guam 6501 and 13089 kHz.

### National Standard Abbreviations for Broadcasts

(353) A listing of Standard Abbreviations for Textual Maritime Safety Broadcasts is contained in Appendix B. These abbreviations were jointly approved by the U.S. Coast Guard, National Weather Service, National Geospatial-Intelligence Agency and the Radio Technical Commission for Maritime Services. In addition to appearing in radio broadcasts of the U.S. Coast Guard and National Weather Service, they appear in Notices to Mariners of the U.S. Coast Guard and National Geospatial-Intelligence Agency, and in NAVTEX.

### Coast Guard VHF-FM Channel 22A and 2670 kHz Broadcast Warnings

(354) Coast Guard Short Range sites, which provide near continuous coverage of the coastline of the lower 48 states and in selected portions of Alaska, Hawaii, Guam, Puerto Rico and the U.S. Virgin Islands broadcast weather and notices to mariners on medium frequency.

Broadcasts are announced on 2182 kHz and the broadcast is made on 2670 kHz. In addition, these sites and additional sites make broadcasts on VHF-FM Channel 22A (157.1 MHz) after an initial announcement on VHF-FM Channel 16 (156.8 MHz).

(355) In addition, these sites make unscheduled broadcasts of urgent marine information on 2670 kHz or VHF-FM Channel 22A (157.1 MHz) after initial announcement on 2182 kHz or VHF-FM Channel 16 (156.8 MHz). Coast Guard VHF-FM short range stations are equipped for the transmission and reception of DSC transmissions on VHF-FM Channel 70 (156.525 MHz). Additional sites are under or scheduled for DSC installations. Some short range stations are equipped for DSC operations on 2187.5 kHz.

### NAVTEX Marine Information Broadcasts

(356) NAVTEX is a maritime radio warning system consisting of a series of coast stations transmitting radio teletype (CCIR Recommendation 476 standard narrow band direct printing, sometimes called Sitor or ARQ/FEC) safety messages on the international standard medium frequency 518 kHz. Coast stations transmit during preset time slots so as to minimize interference with one another. Routine messages are normally broadcast four to six times daily. Urgent messages are broadcast upon receipt, provided that an adjacent station is not transmitting. Since the broadcast uses the medium frequency band, a typical station service radius ranges to 200 NM.

(357) Each NAVTEX message broadcast contains a four-character header describing identification of station (first character), message content (second character), and message serial number (third and fourth characters). This header allows the microprocessor in the shipborne receiver to screen messages, selecting only those stations relevant to the user, messages of subject categories needed by the user, and messages not previously received by the user. Selected messages are printed on a roll of paper as received or stored, to be read by the mariner at his convenience. Unwanted messages are suppressed. Certain categories of NAVTEX messages cannot be suppressed by international agreement. Suppression of unwanted messages is more and more important to the mariner as the number of messages, including rebroadcasts, increases yearly.

(358) Vessels regulated by the Safety of Life at Sea (SOLAS) Convention, as amended (cargo vessels over 300 tons and passenger vessels, on international voyages), and operating in areas where NAVTEX service is available, have been required to carry NAVTEX receivers since 1 August 1993. The USCG voice broadcasts (Ch. 22A), often of more inshore and harbor information, will remain unaffected by NAVTEX.

(358.01) See Appendix A, U.S. NAVTEX Transmitting Stations, for a list of NAVTEX broadcast stations (Atlantic Ocean) and message content.

### NOAA Weather Radio

(359) NOAA Weather Radio provides continuous broadcasts of the latest weather information directly from NWS offices. In addition to general weather information, marine weather is provided by stations along the sea coasts and the Great Lakes. During severe weather, NWS forecasters can interrupt the regular broadcasts and substitute special warning messages. The forecasters can also activate specially designed warning receivers. These receivers either sound an alarm alerting the listener to the forthcoming broadcast or, when operated in a muted mode, automatically turn on so that the warning message is heard.

(360) NOAA Weather Radio taped messages are repeated every 4 to 6 minutes and are routinely revised every 1 to 3 hours, or more frequently if necessary. The stations operate 24 hours daily. The broadcasts are made on seven **VHF-FM frequencies, 162.40, to 162.55 MHz. The 162.475 MHz frequency** is only used in special cases where needed to avoid channel interference. A number of manufacturers offer special weather radios to operate on these frequencies, with or without emergency warning alarm, and many AM/FM radios on the market now offer the "weather band" as an added feature. The broadcasts can usually be heard as far as 40 miles from the antenna site, sometimes more. The effective range depends on many factors, including the height of the broadcast antenna, terrain, quality of the receiver, and the type of receiving antenna. As a general rule, listeners close to or perhaps beyond the 40 mile range should have a good quality receiver system to get reliable reception. (See Appendix A for a list of these stations in the area covered by this Coast Pilot.)

### Marine Weather Services Charts (MSC)

(361) Marine Weather Services Charts (MSC), published by the National Weather Service, list frequencies and schedules of broadcasts of stations giving weather forecasts and warnings (see Appendix A for address).

### Commercial radiotelephone coast stations

(362) Broadcasts of coastal weather and warnings are made by some commercial radiotelephone coast stations (marine operators) on the normal transmitting frequencies of the stations. Vessels with suitable receivers and desiring this service may determine the frequencies and schedules of these broadcasts from their local stations, from Selected Worldwide Marine Weather Broadcasts, or from the series of Marine Weather Services Charts published by NWS.

### Local broadcast-band radio stations

(363) Many local radio stations in the standard AM and FM broadcast band give local marine weather forecasts from NWS on a regular schedule. These stations are listed on the series of Marine Weather Services Charts published by NWS.

### Reports from ships

(364) The master of every U.S. ship equipped with radio transmitting apparatus, on meeting with a tropical cyclone, dangerous ice, subfreezing air temperatures with gale force winds causing severe ice accretion on superstructures, derelict, or any other direct danger to navigation, is required to cause to be transmitted a report of these dangers to ships in the vicinity and to the appropriate Government agencies.

(365) During the West Indies hurricane season, June 1 to November 30, ships in the Gulf of Mexico, Caribbean Sea area, southern North Atlantic Ocean, and the Pacific waters west of Central America and Mexico are urged to cooperate with NWS in furnishing these special reports in order that warnings to shipping and coastal areas may be issued.

### Time Signals

(366) The **National Institute of Standards and Technology (NIST)** broadcasts time signals continuously, day and night, from its radio stations **WWV,** near Fort Collins, Colorado, (40°49'49"N., 105°02'27"W.) on frequencies of 2.5, 5, 10, 15, and 20 MHz, and **WWVH,** Kekaha, Kauai, Hawaii (21°59'26"N., 159°46'00"W.) on frequencies 2.5, 5, 10, and 15 MHz. Services include time announcements, standard time intervals, standard audio frequencies, geophysical alerts, BCD (binary coded decimal) time code, UT1 time corrections, and high seas storm information.

(367) Time announcements are made every minute, commencing at 15 seconds before the minute by a female voice and at 7½ seconds before the minute by a male voice, from WWVH and WWV, respectively. The time given is in Coordinated Universal Time (UTC) and referred to the time at Greenwich, England, i.e., Greenwich Mean Time.

(368) **NIST Time and Frequency Dissemination Services, Special Publication 432**, gives a detailed description of the time and frequency dissemination services of the **National Institute of Standards and Technology.** Single copies may be obtained upon request from the National Institute of Standards and Technology, Time and Frequency Division, Boulder, CO 80303. Quantities may be obtained from the Government Printing Office (see Appendix A for address).

## CAUTIONARY INFORMATION

### Destructive Waves

(369) Unusual sudden changes in water level can be caused by tsunamis or violent storms. These two types of destructive waves have become commonly known as **tidal waves,** a name which is technically incorrect as they are not the result of tide-producing forces.

(370) **Tsunamis** (**seismic sea waves**) are caused by sea-bottom earthquakes. Many such seismic disturbances do not produce sea waves and others produce small sea waves, but the occasional large waves can be very damaging to shore installations and dangerous to ships in harbors.

(371) These waves travel great distances and can cause tremendous damage on coasts far from their source. The wave of April 1, 1946, which originated in the Aleutian Trench, demolished nearby Scotch Cap Lighthouse and caused damages of 25 million dollars in the Hawaiian Islands 2,000 miles away. The wave of May 22-23, 1960, which originated off Southern Chile, caused widespread death and destruction in islands and countries throughout the Pacific. A more recent tsunami, the result of a December 26, 2004 earthquake off the island of Sumatra, Indonesia, caused widespread damage throughout the Indian Ocean. Damage was heavy as far away as the east coast of Africa. It caused over 200,000 deaths (as far away as South Africa) and 13 billion dollars worth of damage.

(372) The speed of tsunamis varies with the depth of the water, reaching 300 to 500 knots in the deep water of the open ocean. In the open sea they cannot be detected from a ship or from the air because their length is so great, sometimes a hundred miles, as compared to their height, which is usually only a few feet (a meter or 2). The waves only build to disastrous proportions when they approach shore.

(373) There are usually a series of waves with crests 10 to 40 minutes apart, and the highest may occur several hours after the first wave. Sometimes the first noticeable part of the wave is the trough which causes a recession of the water from shore, and people who have gone out to investigate this unusual exposure of the beach have been engulfed by the oncoming crest. Such an unexplained withdrawal of the sea should be considered as nature's warning of an approaching wave.

(374) Improvements have been made in the quick determination and reporting of earthquake epicenters, but no method has yet been perfected for determining whether a sea wave will result from a given earthquake. NOAA's Pacific Tsunami Warning Center in Hawaii has deployed a warning system which has field reporting stations (seismic and tidal) in most countries around the Pacific. When a warning is broadcast, waterfront areas should be vacated for higher ground, and ships in the vicinity of land should head for the deep water of the open sea.

### Storm surge

(375) A considerable rise or fall in the level of the sea along a particular coast may result from strong winds and sharp change in barometric pressure. In cases where the water level is raised, higher waves can form with greater depth and the combination can be destructive to low regions, particularly at high stages of tide. Extreme low levels can result in depths which are considerably less than those shown on nautical charts. This type of

wave occurs especially in coastal regions bordering on shallow waters which are subject to tropical storms.

(376) **Seiche** is a stationary vertical wave oscillation with a period varying from a few minutes to an hour or more, but somewhat less than the tidal periods. It is usually attributed to external forces such as strong winds, changes in barometric pressure, swells, or tsunamis disturbing the equilibrium of the water surface. Seiche is found both in enclosed bodies of water and superimposed upon the tides of the open ocean. When the external forces cause a short-period horizontal oscillation on the water, it is called **surge**.

(377) The combined effect of seiche and surge sometimes makes it difficult to maintain a ship in its position alongside a pier even though the water may appear to be completely undisturbed, and heavy mooring lines have been parted repeatedly under such conditions. Pilots advise taut lines to reduce the effect of the surge.

### Immersion Hypothermia

(378) Immersion hypothermia is the loss of heat when a body is immersed in water. With few exceptions, humans die if their core temperature of approximately 99.7° F drops below 78.6° F. Cardiac arrest is the most common direct cause of death. During prolonged immersion, the main threat to life is cold or cold and drowning combined.

(379) The length of time that a human survives in water depends on the water temperature, and to a lesser extent, on the person's behavior and body type. The table below shows approximate human survival time in the sea. Body type can cause deviations, as small people become hypothermic more rapidly than large people. The cooling rate can be slowed by the person's behavior and insulated gear. The Heat Escape Lessening Posture (HELP) was developed for those in the water alone and the Huddle for small groups. Both require a PFD (personal flotation device), or life preserver. HELP involves holding the arms close to the body, keeping the thighs together, and raising the knees to protect the groin area. In the Huddle, people face each other and keep their bodies as close together as possible. These positions improve survival time to approximately two times that of a swimmer and one and a half times that of a person in the passive position.

**SURVIVAL TIME VERSUS WATER TEMPERATURE**

| Water Temperature (°F) | Exhaustion or Unconsciousness | Expected Time of Survival |
|---|---|---|
| 32 | 15 min | 15-45 min |
| 32-41 | 15-30 min | 30-90 min |
| 41-50 | 30-60 min | 1-3 hrs |
| 50-59 | 1-2 hrs | 1-6 hrs |
| 59-68 | 2-7 hrs | 2-40 hrs |
| 68-77 | 3-12 hrs | 3 hrs-indefinite |
| 77 and above | indefinite | indefinite |

(380) Near-drowning victims in cold water (less than 70° F) are revivable for much longer periods than usual. Keys to a successful revival are immediate cardiopulmonary resuscitation (CPR) and administration of pure oxygen. Total re-warming is not necessary at first. The whole revival process may take hours and require medical help.

### Wind Chill and Frostbite

(381) When the body is warmer than its surroundings, it begins to lose heat. The rate of loss depends on barriers such as clothing and insulation, the speed of air movement and air temperature. Heat loss increases dramatically in moving air that is colder than skin temperature (91.4° F). Even a light wind increases heat loss, and a strong wind can lower the body temperature if the rate of loss is greater than the body's heat replacement rate.

(382) When skin temperature drops below 50° F, there is a marked constriction of blood vessels, leading to vascular stagnation, oxygen want and cellular damage. The first indication that something is wrong is a painful tingling. Swelling of varying extent follows, provided freezing has not occurred. Excruciating pain may be felt if the skin temperature is lowered rapidly, but freezing of localized portions of the skin may be painless when the rate of change is slow. Possible effects of cold include cold allergy (welts), chilblains, which appear as reddened, warm, itching, swollen patches on the fingers and toes, and trench foot and immersion foot, which present essentially the same picture. Both result from exposure to cold and lack of circulation. Wetness can add to the problem as water and wind soften the tissues and accelerate heat loss.

(383) Frostbite usually begins when the skin temperature falls within the range of 14° to 4° F. Ice crystals form in the tissues and small blood vessels. The rate of heat loss determines the rate of freezing, which is accelerated by wind, wetness, extreme cold and poor blood circulation. Parts of the body susceptible to freezing are those with surfaces large in relation to their volume, such as toes, fingers, ears, nose, chin and cheeks.

(384) Injuries from the cold may, to a large extent, be prevented by maintaining natural warmth through the use of proper footgear and adequate, dry clothing, by avoiding cramped positions and constricting clothing and by active exercise of the hands, legs and feet.

## MARINE POLLUTION

### The Federal Water Pollution Control Act or Clean Water Act

(385) The Federal Water Pollution Control Act (FWPCA) Federal Water Pollution Control Act (FWPCA) or Clean Water Act (CWA)Clean Water Act (CWA) was passed to

restore and maintain the chemical, physical and biological integrity of our nation's waters.

**No-Discharge Zones**

(386) Section 312 of the FWPCA gives the Environmental Protection Agency (EPA) and States the authority to designate certain areas as No-Discharge Zones (NDZ) for vessel sewage. Freshwater lakes, freshwater reservoirs, or other freshwater impoundments whose entrances and exits prohibit traffic by regulated vessels (vessels with installed toilets) are, by regulation, NDZs. Rivers that do not support interstate navigation vessel traffic are also NDZs by regulation. Water bodies that can be designated as NDZs by States and EPA include: the Great Lakes and their connecting waterways, freshwater lakes and impoundments accessible through locks, and other flowing waters that support interstate navigation by vessels subject to regulation.

(387) Inside No-Discharge Zone waters, discharge of any sewage, whether treated or untreated, is completely prohibited.

(388) Discharge of sewage in waters not designated as No-Discharge Zones is regulated by the Marine Sanitation Device Standard (see **40 CFR 140** in Chapter 2.)

(389) (Additional information concerning the regulations may be obtained from the Environmental Protection Agency (EPA) website: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.)

**Oil Pollution**

(390) The FWPCA also prohibits the discharge of quantities of either oil or hazardous substance which may be harmful into or upon the navigable waters of the United States. This prohibition also applies to adjoining shorelines, waters of the contiguous zone, activities connected with the Outer Continental Shelf Lands Act (OSLA) and Deepwater Port Act of 1974, and such discharges which may affect natural resources belonging to the United States or under its exclusive management authority, including those resources under the Fishery Conservation and Management Act of 1976. In the event a spill does occur in violation of the Act the person in charge of a vessel or onshore or offshore facility is required to notify the Coast Guard as soon as he has knowledge of the spill. Such notification is to be by the most rapid means available to the National Response Center (1-800-424-8802, nationwide 24 hour number).

**The Act to Prevent Pollution from Ships**

(391) The Act to Prevent Pollution from Ships (33 U.S.C. 1901) implements into U.S. law the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 (MARPOL 73/78). Annex I of MARPOL 73/78 deals with oil and oily waste, Annex II with hazardous chemicals and other substances referred to as Noxious Liquid Substances (NLS), and Annex V deals with the prevention of marine pollution by plastics and other garbage produced during vessel operations.

(392) Annex I of MARPOL 73/78 is applicable to oceangoing tankers over 150 gross tons and all other oceangoing ships over 400 gross tons. The MARPOL 73/78 requirements include oily waste discharge limitations, oily-water separating equipment, monitoring and alarm systems for discharges from cargo areas, cargo pump rooms and machinery space bilges. Ships to which Annex I MARPOL 73/78 is applicable are also required to have an International Oil Pollution Prevention (IOPP) Certificate verifying that the vessel is in compliance with the requirements of MARPOL 73/78 and that any required equipment is on board and operational. Vessels must also maintain an Oil Record Book recording all oil transfers and discharges. The Oil Record Book is available from USCG Supply Center Baltimore or any local Captain of the Port.

(393) Annex II of MARPOL 73/78 is applicable to oceangoing vessels and non-self propelled oceangoing ships which carry Noxious Liquid Substances (NLS) in bulk. The Annex II requirements include discharge restrictions for various classes of cargo residues; the maintenance of a Cargo Record Book for recording all NLS cargo and residue transfers and discharges; and a Procedures and Arrangements Manual describing the correct procedures for off loading and prewashing cargo tanks.

(394) Annex II NLS cargoes are classified in one of four categories, A, B, C, or D. Category A is the most hazardous to the environment. Category A and other substances which tend to solidify in tanks must be prewashed in port under the supervision of a Prewash Surveyor prior to departure from the off loading terminal. Vessel discharges must be underwater when discharge at sea is allowed. Tanks which carry Category B and C NLS must be tested to ensure that after tank stripping only a minimal amount of residues will remain. Reception facilities must be able to assist in cargo stripping operations by reducing back pressure during the final stages of off loading.

(395) Terminals and ports receiving oceangoing tankers, or any other oceangoing ships of 400 GT or more, carrying residues and mixtures containing oil, or receiving oceangoing ships carrying NLSs, are required to provide adequate reception facilities for the wastes generated. Coast Guard Captains of the Port issue a Certificate of Adequacy to terminals or ports to show that they are in compliance with federal reception facility requirements. An oceangoing tanker or any other oceangoing ship of 400 GT or more required to retain oil or oily residues and mixtures on board and an oceangoing ship carrying a Category A, B or C NLS cargo or NLS residue in cargo tanks that are required to be prewashed, may not enter any port or terminal unless the port or terminal holds a valid Certificate of Adequacy or unless the ship is entering under force majeure.

(396) Annex V is applicable to all recreational, fishing, uninspected and inspected vessels, and foreign flag

vessels on the navigable waters and all other waters subject to the jurisdiction of the United States, out to and including the Exclusive Economic Zone (200 miles).

(397) Annex V prohibits the disposal of any and all plastic material from any vessel anywhere in the marine environment. Dunnage, lining and packing materials which float may be disposed of beyond 25 miles from the nearest land. Other garbage that will not float may be disposed of beyond 12 miles of land, except that garbage which can pass through a 25mm mesh screen (approximately 1 square inch) may be disposed of beyond 3 miles. Dishwater is not to be considered garbage within the meaning of Annex V when it is the liquid residue from the manual or automatic washing of dishes or cooking utensils. More restrictive disposal regimes apply in waters designated "Special Areas." This Annex requires terminals to provide reception facilities at ports and terminals to receive plastics and other garbage from visiting vessels.

(398) The civil penalty for each violation of MARPOL 73/78 is not more than $25,000. The criminal penalty for a person who knowingly violates the MARPOL Protocol, or the regulations (**33 CFR 151, 155, 157, and 158**), consists of a fine of not more than $250,000 and/or imprisonment for not more than 5 years; U.S. law also provides criminal penalties up to $500,000 against organizations which violate MARPOL.

### Packaged Marine Pollutants

(399) On October 1, 1993, new regulations under the Hazardous Materials Transportation Act (HMTA) took effect, implementing MARPOL Annex III in the United States. MARPOL Annex III deals with the prevention of marine pollution by harmful substances in packaged form.

(400) Annex III of MARPOL 73/78 applies to all ships carrying harmful substances in packaged form. Annex III provides standards for stowage, packing, labeling, marking, and documentation of substances identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code). On 5 November 1992, the U.S. Research and Special Programs Administration (RSPA) amended the Hazardous Materials Regulations (HMR, 49 CFR 100-177) to list and regulate these marine pollutants in all modes of transportation.

(401) Marine pollutants are divided into two classes: marine pollutants and severe marine pollutants. A solution or mixture containing 10% or more of any marine pollutant falls into the class of "marine pollutant." The "severe marine pollutant" class consists of those materials that contain 1% or more of any specified "severe marine pollutant" substance. Marine pollutants that do not meet the criteria for any other hazard class are transported as an environmentally hazardous substance.

### Ocean Dumping

(402) The Marine Protection Research and Sanctuaries Act of 1972, as amended (33 USC 1401 et seq.), regulates the dumping of all material, except fish waste, into ocean waters. Radiological, chemical and biological warfare agents and other high level radioactive wastes are expressly banned from ocean disposal. The U.S. Army Corps of Engineers issues permits for the disposal of dredged spoils; the Environmental Protection Agency is authorized to issue permits for all other dumping activities. Surveillance and enforcement to prevent unlawful transportation of material for dumping or unlawful dumping under the Act has been assigned to the U.S. Coast Guard. The Act provides civil penalties of up to $50,000 and criminal penalties of up to $50,000 and/or one year imprisonment.

## MINECLEARING: CAUTION

### Keep Clear of Mineclearance Vessels (COLREGS 1972)

(403) (a) United States vessels engaged in mineclearing operations or exercises are hampered to a considerable extent in their maneuvering powers.

(404) (b) With a view to indicating the nature of the work on which they are engaged, these vessels will show the signals hereinafter mentioned. For the public safety, all other vessels, whether steamers or sailing craft, must endeavor to keep out of the way of vessels displaying these signals and not approach them inside the distances mentioned herein, especially remembering that it is dangerous to pass between the vessels of a pair or group sweeping together.

(405) (c) All vessels towing sweeps are to show:

(406) **BY DAY**–A black ball at the fore mast and a black ball at the end of each fore yard.

(407) **BY NIGHT**–All around green lights instead of the black balls, and in a similar manner.

(408) (d) Vessels or formations showing these signals are not to be approached nearer than 1,000 meters. Under no circumstances is a vessel to pass through a formation of minesweepers.

(409) (e) Mineclearance vessels should be prepared to warn merchant vessels which persist in approaching too close by means of any of the appropriate signals from the International Code of Signals.

(410) (f) In fog, mist, falling snow, heavy rainstorms, or any other conditions similarly restricting visibility, whether by day or night, mineclearance vessels while towing sweeps when in the vicinity of other vessels will sound signals for a vessel towing (1 prolonged blast followed by 2 short blasts).

### Helicopters Conducting Mineclearance Operations

(411) (g) The United States is increasingly employing helicopters to conduct mineclearance operations or exercises. When so engaged, helicopters, like vessels, are considerably hampered in their ability to maneuver. Accordingly, surface craft approaching helicopters

engaged in mineclearance operations should take safety precautions similar to those described in (b) and (d) above with respect to mineclearance vessels.

(412) (h) Helicopters towing mineclearance gear and accompanying surface escorts, if any, will use all available means to warn approaching ships of the operations or exercises being conducted. Also, measures will be taken where practicable to mark or light the gear or objects being towed.

(413) (i) Mineclearance helicopters are equipped with a rotating beacon which has selectable red and amber modes. The amber mode is used during towing operations to notify/warn other vessels that the helicopter is towing. While towing, the helicopter's altitude varies from 15 to 95 meters above the water and speeds vary from 0 to 30 knots.

(414) (j) General descriptions and approximate dimensions for towed mineclearance gear currently being used in conjunction with helicopters are as follows:

(415) (1) Mechanical sweep gear consisting, in part, of large lengths of submerged cables and explosive cutters. The only items normally visible on the surface are three to five international orange floats, depending upon the quantity of gear in use, which generally define the dimensions of the tow. The maximum width is 100 meters and the maximum distance behind the helicopter is 600 meters.

(416) (2) Acoustical sweep device weighing approximately 70 pounds (32 kg). This device is towed behind the helicopter on a 250-meter orange polypropylene tow cable. When dead in the water, the gear will rise to the surface, supported by a yellow float.

(417) (3) A hydrofoil platform containing equipment used for magnetic influence sweeping. The platform is towed on the end of a 140-meter cable and trails electrodes in the water which extend 185 meters behind the platform. Very often, the aforementioned acoustical sweep device is towed in conjunction with this platform by attaching it to the end of one of the electrodes by a 30-meter polypropylene tow line. In this configuration, the total length of the tow is 215 and 350 meters, respectively, behind the hydrofoil platform and helicopter. Special care must be exercised when crossing astern of the hydrofoil platform as the towed cable is barely visible, and the attached acoustic device is submerged just beneath the surface and is not visible to surface vessels.

(418) (k) Helicopters employed in mineclearance operations and their tows may function at night as well as day, and in various types of weather conditions. The major danger to any surface vessel is getting the various cables wrapped in its screws. Small craft also are subject to the risk of collision with the hydrofoil platform.

### Submarine Emergency Identification Signals and Hazard to Submarines

(419) U.S. submarines are equipped with signal ejectors which may be used to launch identification signals, including emergency signals. Two general types of signals may be used: smoke floats and flares or stars. A combination signal which contains both smoke and flare of the same color may also be used. The smoke floats, which burn on the surface, produce a dense, colored smoke for a period of fifteen to forty-five seconds. The flares or stars are propelled to a height of three hundred to four hundred feet (90 to 120 meters) from which they descend by small parachute. The flares or stars burn for about twenty-five seconds. The color of the smoke or flare/star has the following meaning:

(420) (a) **GREEN OR BLACK**–Used under training exercise conditions only to indicate that a torpedo has been fired or that the firing of a torpedo has been simulated.

(421) (b) **YELLOW**–Indicates that submarine is about to come to periscope depth from below periscope depth. Surface craft terminate antisubmarine counter-attack and clear vicinity of submarine. Do not stop propellers.

(422) (c) **RED**–Indicates an emergency condition within the submarine and that it will surface immediately, if possible. Surface ships clear the area and stand by to give assistance after the submarine has surfaced. In case of repeated red signals, or if the submarine fails to surface within reasonable time, she may be assumed to be disabled. Buoy the location, look for submarine buoy and attempt to establish sonar communications. Advise U.S. Naval authorities immediately.

(423) (d) **WHITE**–Two white flares/smoke in succession indicates that the submarine is about to surface, usually from periscope depth (non-emergency surfacing procedure). Surface craft should clear the vicinity of the submarine.

(424) A Submarine Marker Buoy consists of a cylindrically shaped object about 3 feet by 6 feet with connecting structure and is painted international orange. The buoy is a messenger buoy with a wire cable to the submarine; this cable acts as a downhaul line for a rescue chamber. The buoy may be accompanied by an oil slick release to attract attention. A submarine on the bottom in distress and unable to surface will, if possible, release this buoy. If an object of this description is sighted, it should be investigated and U.S. Naval Authorities advised immediately.

(425) Transmission of the International Distress Signal (SOS) will be made on the submarine's sonar gear independently or in conjunction with the red emergency signal as conditions permit. Submarines may employ any or all of the following additional means to attract attention and indicate their position while submerged:

(426) Release of dye marker.

(427) Release of air bubble.

(428) Ejection of oil.

(429) Pounding on the hull.

(430) United States destroyer-type vessels in international waters will, on occasion, stream a towed underwater object at various speeds engaged in naval maneuvers. All nations operating submarines are advised that this underwater object in the streamed condition constitutes a possible hazard to submerged submarines.

### Vessels Constrained by their Draft

(431) International Navigation Rules, Rule 28, states that a vessel constrained by her draft may, in addition to the lights prescribed for power-driven vessels in Rule 23, exhibit where they can best be seen three all-around red lights in a vertical line, or a cylinder.

### Special signals for surveying vessels

(432) Vessels engaged in survey operations and limited in their ability to maneuver because of the work being performed (handling equipment over-the-side such as water sampling or conductivity-temperature-density (CTD) casts, towed gear, bottom samplers, etc., and divers working on, below or in proximity of the vessel) are required by Navigation Rules, International-Inland, Rule 27, to exhibit:

(433) (b)(i) three all-round lights in a vertical line where they can best be seen. The highest and lowest of these lights shall be red and the middle light shall be white;

(434) (ii) three shapes in a vertical line where they can best be seen. The highest and lowest of these shapes shall be balls and the middle one a diamond;

(435) (iii) when making way through the water, masthead lights, sidelights and a sternlight, in addition to the lights prescribed in subparagraph (b)(i); and

(436) (iv) when at anchor, in addition to the lights or shapes prescribed in subparagraphs (b)(i) and (ii) the light, lights or shapes prescribed in Rule 30, Anchored Vessels and Vessels Aground.

(437) A vessel engaged in hydrographic survey operations (making way on a specific trackline while sounding the bottom) is not restricted in its ability to maneuver and therefore exhibits at night only those lights required for a power-driven vessel of its length.

(438) **Warning signals for Coast Guard vessels while handling or servicing aids to navigation** are the same as those prescribed for surveying vessels.

### VHF-FM Radiotelephone

(439) VHF-FM channel 16 (156.800 MHz) is the international distress, urgency, safety, calling and reply frequency for vessels and public and private coastal stations. In 1992, the Federal Communications Commission (FCC) designated VHF-FM channel 9 (156.450 MHz) for use as a general purpose calling frequency for non-commercial vessels, such as recreational boats. This move was designed to relieve congestion on VHF-FM channel 16. Non-commercial vessels are encouraged to use VHF-FM channel 9, for routine communications but distress, urgency, and safety calls should continue to be initially made on VHF-FM channel 16. U.S. Coast Guard stations do not guard VHF-FM channel 9.

(440) The following table provides the frequency equivalents and general usage of selected VHF-FM channels which appear in the Coast Pilot. The letter "A" appended to a channel number indicates that U.S. operation of the particular channel is different than the international operation, i.e., U.S. stations transmit and receive on the same frequency and international stations use different frequencies.

(441) All channels given in the table (later in this chapter) are designated for both ship-to-ship and ship-to-coast communications except as noted.

## SELECT NAVIGATION RULES

### Improper use of searchlights

(442) No person shall flash or cause to be flashed the rays of a searchlight or other blinding light onto the bridge or into the pilothouse of any vessel underway. The International Code Signal "PG2" may be made by a vessel inconvenienced by the glare of a searchlight in order to apprise the offending vessel of the fact.

### Use of Radar

(443) Navigation Rules, International-Inland, Rule 7, states, in part, that every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist. Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

(444) This rule places an additional responsibility on vessels which are equipped and manned to use radar to do so while underway during periods of reduced visibility without in any way relieving commanding officers of the responsibility of carrying out normal precautionary measures.

(445) Navigation Rules, International-Inland, Rules 6, 7, 8, and 19 apply to the use of radar.

### Danger signal

(446) Navigation Rules, International-Inland, Rule 34(d), states that when vessels in sight of one another are approaching each other and from any cause either vessel fails to understand the intentions or actions of the other, or is in doubt whether sufficient action is being taken by the other to avoid collision, the vessel in doubt shall immediately indicate such doubt by giving at least five short and rapid blasts on the whistle. Such signal may be supplemented by a light signal of at least five short and rapid flashes.

### Narrow channels

(447) Navigation Rules, International-Inland, Rule 9(b) states: A vessel of less than 65.6 feet (20 meters) in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway.

| Channel | Ship Frequency (MHz) Transmit | Ship Frequency (MHz) Receive | Channel Usage |
|---|---|---|---|
| 1A | 156.050 | 156.050 | Port Operations and commercial, VTS (Note 2) |
| 5A | 156.250 | 156.250 | Port Operations or VTS (Note 1) |
| 6 | 156.300 | 156.300 | Intership safety |
| 7A | 156.350 | 156.350 | Commercial |
| 8 | 156.400 | 156.400 | Commercial (Intership only) |
| 9 | 156.450 | 156.450 | Boater Calling; Commercial and Non-commercial |
| 10 | 156.500 | 156.500 | Commercial |
| 11 | 156.550 | 156.550 | Commercial; VTS in selected areas |
| 12 | 156.600 | 156.600 | Port Operations; VTS in selected areas |
| 13 | 156.650 | 156.650 | Intership Navigation Safety (bridge-to-bridge) (Note 4) |
| 14 | 156.700 | 156.700 | Port Operations; VTS in selected areas |
| 15 | N/A | 156.750 | Environmental (receive only - used by Class C EPIRBs) |
| 16 | 156.800 | 156.800 | International Distress, Safety and Calling (Note 5) |
| 17 | 156.850 | 156.850 | State control |
| 18A | 156.900 | 156.900 | Commercial |
| 19A | 156.950 | 156.950 | Commercial |
| 20 | 157.000 | 161.600 | Port Operations (duplex) |
| 20A | 157.000 | 157.000 | Port Operations |
| 21A | 157.050 | 157.050 | U.S. Coast Guard only |
| 22A | 157.100 | 157.100 | Coast Guard Liaison and Maritime Safety Information Broadcasts (broadcasts announced on channel 16) |
| 23A | 157.150 | 157.150 | U.S. Coast Guard only |
| 24 | 157.200 | 161.800 | Public Correspondence (Marine Operator) |
| 25 | 157.250 | 161.850 | Public Correspondence (Marine Operator) |
| 26 | 157.300 | 161.900 | Public Correspondence (Marine Operator) |
| 27 | 157.350 | 161.950 | Public Correspondence (Marine Operator) |
| 28 | 157.400 | 162.000 | Public Correspondence (Marine Operator) |
| 63A | 156.175 | 156.175 | Port Operations and Commercial, VTS (Note 2) |
| 65A | 156.275 | 156.275 | Port Operations |
| 66A | 156.325 | 156.325 | Port Operations |
| 67 | 156.375 | 156.375 | Commercial (Note 3) |
| 68 | 156.425 | 156.425 | Non-Commercial |
| 69 | 156.475 | 156.475 | Non-Commercial |
| 70 | 156.525 | 156.525 | Digital Selective Calling (voice communications not allowed) |
| 71 | 156.575 | 156.575 | Non-Commercial |
| 72 | 156.625 | 156.625 | Non-Commercial (Intership only) |
| 73 | 156.675 | 156.675 | Port Operations |
| 74 | 156.725 | 156.725 | Port Operations |
| 77 | 156.875 | 156.875 | Port Operations (Intership only) |
| 78A | 156.925 | 156.925 | Non-Commercial |
| 79A | 156.975 | 156.975 | Commercial (Non-commercial in Great Lakes only) |
| 80A | 157.025 | 157.025 | Commercial (Non-commercial in Great Lakes only) |
| 81A | 157.075 | 157.075 | U.S. Government only (environmental protection operations) |
| 82A | 157.125 | 157.125 | U.S. Government only |
| 83A | 157.175 | 157.175 | U.S. Coast Guard only |
| 84 | 157.225 | 161.825 | Public Correspondence (Marine Operator) |
| 85 | 157.275 | 161.875 | Public Correspondence (Marine Operator) |
| 86 | 157.325 | 161.925 | Public Correspondence (Marine Operator) |
| 87 | 157.375 | 157.375 | Public Correspondence (Marine Operator) |
| 88A | 157.425 | 157.425 | Commercial (Intership only) |
| AIS 1 | 161.975 | 161.975 | Automatic Identification System (AIS) |

Note 1 – Houston, New Orleans and Seattle areas.
Note 2 – Available only in New Orleans/Lower Mississippi area.
Note 3 – Used for bridge-to-bridge communications in Lower Mississippi River. (Intership only.)
Note 4 – Ships greater than 20 meters in length maintain a listening watch on this channel in U.S. waters.
Note 5 – Ships required to carry radio, USCG, and most coast stations maintain a listening watch on this channel.

### Homeland Security Advisory System

(448) The **Homeland Security Advisory System** is a comprehensive and effective means to disseminate information regarding the risk of terrorist acts to Federal, State, and local authorities and to the American people. The system is designed to guide our protective measures when specific information to a particular sector or geographic region is received. It combines threat information with vulnerability assessments and provides communications to public safety officials and the public. This communication is achieved through threat advisories, information bulletins, and a color-coded threat level system.

### U.S. Coast Guard Maritime Security (MARSEC) Levels

(449) The U.S. Coast Guard has a three-tiered system of **Maritime Security (MARSEC) Levels** consistent with the Department of Homeland Security's Homeland Security Advisory System (HSAS). MARSEC levels are designed to provide a means to easily communicate preplanned scalable responses to increased threat levels. The Commandant of the U.S. Coast Guard sets MARSEC levels commensurate with the HSAS. Because of the unique nature of the maritime industry, the HSAS threat conditions and MARSEC levels will align closely, though they will not directly correlate.

(450) **MARSEC Level 1** – the level for which minimum appropriate security measures shall be maintained at all times. MARSEC 1 generally applies when HSAS Threat Condition Green, Blue, or Yellow are set.

(451) **MARSEC Level 2** – the level for which appropriate additional protective security measures shall be maintained for a period of time as a result of heightened risk of a transportation security incident. MARSEC 2 generally corresponds to HSAS Threat Condition Orange.

(452) **MARSEC Level 3** – the level for which further specific protective security measures shall be maintained for a limited period of time when a transportation security incident is probable, imminent, or has occurred, although it may not be possible to identify the specific target. MARSEC 3 generally corresponds to HSAS Threat Condition Red.

## REGULATED WATERS

### Traffic Separation Schemes (Traffic Lanes)

(453) To increase the safety of navigation, particularly in converging areas of high traffic density, routes incorporating traffic separation have been adopted by the IMO in certain areas of the world. In the interest of safe navigation, it is recommended that through traffic use these schemes, as far as circumstances permit, by day and by night and in all weather conditions.

(454) An area to be avoided (ATBA) is a routing measure comprising an area within defined limits, in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties, and which should be avoided by all ships, or certain classes of ships.

(455) The International Maritime Organization (IMO) is recognized as the only international body responsible for establishing and recommending measures on an international level concerning ships' routing. In deciding whether or not to adopt or amend a traffic separation scheme, IMO will consider whether the scheme complies with the design criteria for traffic separation schemes and with the established methods of routing. IMO also considers whether the aids to navigation proposed will enable mariners to determine their position with sufficient accuracy to navigate the scheme in accordance with Rule 10 of the International Regulations for Preventing Collisions at Sea (72 COLREGS).

(456) General principles for navigation in Traffic Separation Schemes are as follows:

(457) 1. A ship navigating in or near a traffic separation scheme adopted by IMO shall in particular comply with Rule 10 of the 72 COLREGS to minimize the development of risk of collisions with another ship. The other rules of the 72 COLREGS apply in all respects, and particularly the steering and sailing rules if risk of collision with another ship is deemed to exist.

(458) 2. Traffic separation schemes are intended for use by day and by night in all weather, ice-free waters or under light ice conditions where no extraordinary maneuvers or assistance by icebreaker(s) is required.

(459) 3. Traffic separation schemes are recommended for use by all ships unless stated otherwise. Bearing in mind the need for adequate underkeel clearance, a decision to use a traffic separation scheme must take into account the charted depth, the possibility of changes in

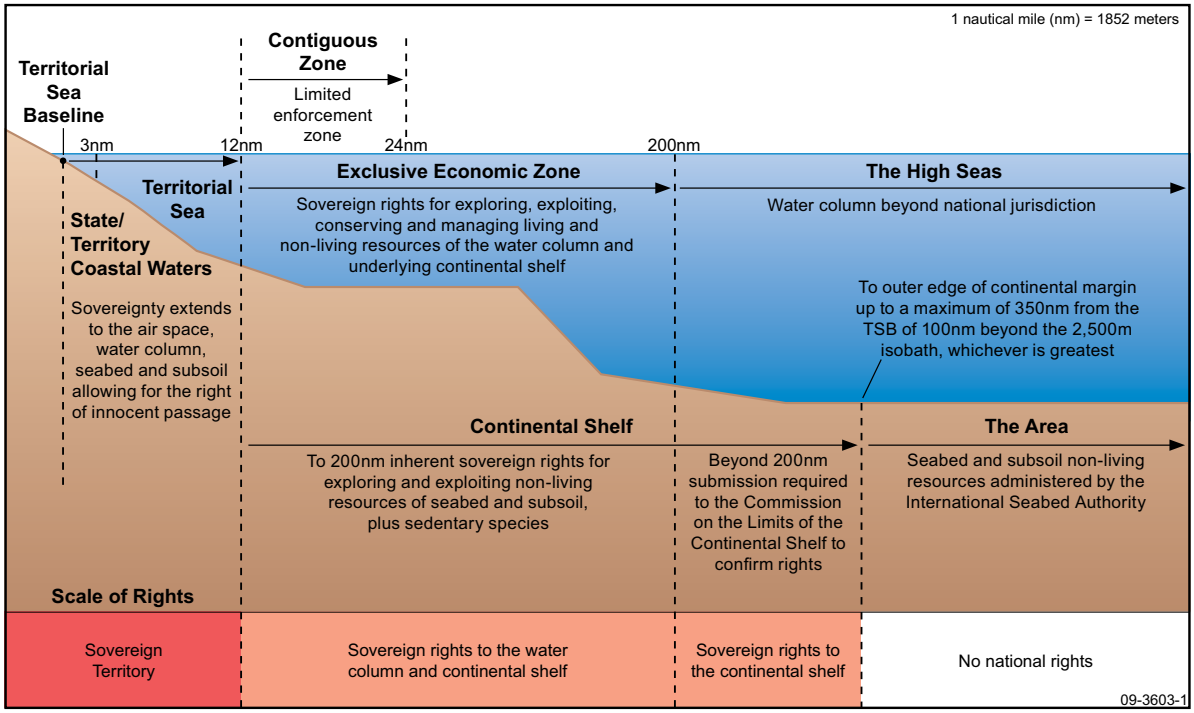


Figure 1: Offshore extent of the maritime zones recognized under international law

the seabed since the time of last survey, and the effects of meteorological and tidal conditions on water depths.

(460) 4. A deep water route is an allied routing measure primarily intended for use by ships which require the use of such a route because of their draft in relation to the available depth of water in the area concerned. Through traffic to which the above consideration does not apply should, if practicable, avoid following deep water routes. When using a deep water route mariners should be aware of possible changes in the indicated depth of water due to meteorological or other effects.

(461) 5. The arrows printed on charts merely indicate the general direction of traffic; ships should not set their courses strictly along the arrows.

(462) 6. Vessels should, so far as practicable, keep clear of a traffic separation line or separation zone.

(463) 7. Vessels should avoid anchoring in a traffic separation scheme or in the area near its termination.

(464) 8. The signal "YG" meaning "You appear not to be complying with the traffic separation scheme" is provided in the International Code of Signals for appropriate use.

(465) **Note**–Several governments administering Traffic Separation Schemes have expressed their concern to IMO about the large number of infringements of Rule 10 of the 72 COLREGS and the dangers of such contraventions to personnel, vessels and environment. Several governments have initiated surveillance of traffic separation schemes for which they are responsible and are providing documented reports of vessel violations to flag states. As in the past, the U.S. Coast Guard will investigate these reports and take appropriate action. Mariners are urged to comply at all times with the 72 COLREGS.

(466) 9. Notice of temporary adjustments to traffic separation schemes for emergencies or for accommodation of activities which would otherwise contravene Rule 10 or obstruct navigation may be made in Notices to Mariners. Temporary adjustments may be in the form of a precautionary area within a traffic lane, or a shift in the location of a lane.

(467) 10. The IMO approved routing measures which affect shipping in or near U.S. waters are:

### Traffic Separation Schemes

(468) In the approaches to Portland, Maine

(469) In the Approaches to Boston, Massachusetts

(470) In the Approaches to Narragansett Bay, Rhode Island and Buzzards Bay, Massachusetts

(471) Off New York

(472) Off Delaware Bay

(473) In the approaches to Chesapeake Bay, including a deep water route

(474) In the Approaches to Cape Fear River

(475) In the Approaches to Galveston Bay

(476) Off San Francisco

(477) In the Santa Barbara Channel

(478) In the Approaches to Los Angeles-Long Beach

(479) In the Strait of Juan de Fuca and its approaches
(480) In Puget Sound and its approaches
(481) In Haro Strait, Boundary Pass, and the Strait of Georgia
(482) In Prince William Sound, Alaska

**Areas to Be Avoided**

(483) In the region of Nantucket Shoals
(484) In the vicinity of Northeast Gateway Energy Bridge Deepwater Port
(485) In the Great South Channel
(486) Off the Florida Coast (Adjacent to Florida Keys)
(487) At Louisiana Offshore Oil Port (LOOP) in the Gulf of Mexico
(488) Off the California Coast (In the region of the Channel Islands)
(489) Off Washington Coast
(490) In the region of the Northwest Hawaiian Islands

**No Anchoring Areas**

(491) In the vicinity of Northeast Gateway Energy Bridge Deepwater Port
(492) In the vicinity of Neptune Deepwater Port
(493) Flower Garden Banks
(494) Tortugas Ecological Reserve and the Tortugas Bank in the Florida Keys
(495) West Cameron area of Northwestern Gulf of Mexico

**Recommended Tracks**

(496) Off the California Coast (off Monterey Bay for vessels 300 gross tons or more and vessels carrying hazardous cargo in bulk)

**Two-way Route**

(497) In the Strait of Juan de Fuca
(498) When approved or established, traffic separation scheme details are announced in Notice to Mariners, and later depicted on appropriate charts and included in the U.S. Coast Pilot.

**Maritime Zones**

(499) The maritime zones recognized under international law include: internal waters, territorial sea, contiguous zone, exclusive economic zone, continental shelf, the high seas and the Area (see Figure 1). The following zones are depicted on NOAA's nautical charts: internal waters, territorial sea, contiguous zone, and exclusive economic zone. The limits of these zones are subject to modification as depicted on future charts; limits shown on the most recent chart edition take precedence.

**Internal Waters**

(500) Internal waters are the waters (harbors, bays, and rivers) on the landward side of the baseline from which the breadth of the territorial sea is measured. The United States has full sovereignty over its internal waters and ports as if they were part of its land territory. NOAA's nautical charts depict the baseline from which the limits of the U.S. territorial sea, contiguous zone, and exclusive economic zone are measured as well as the Three Nautical Mile Line and Natural Resources Boundary, as described below.

**Territorial Sea**

(501) The territorial sea of the United States extends beyond the land territory and internal waters, and also includes the Commonwealth of Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, the Commonwealth of the Northern Mariana Islands, and any other territory or possession over which the United States exercises sovereignty. (Presidential Proclamation No. 5928. December 27, 1988.) The United States exercises sovereignty over the territorial sea that extends to the airspace over the area, and to the bed and subsoil. Under customary international law as reflected in the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the territorial sea of the United States extends to 12 nautical miles (nm) from the baseline from which the breadth of the territorial sea is measured; determined in accordance with international law except as otherwise established in a maritime boundary treaty of the United States. While the United States may adopt certain laws and regulations, vessels of all countries navigating through the territorial sea enjoy the right of innocent passage; vessels and aircraft of all countries enjoy the right of transit passage through international straits.

**Contiguous Zone**

(502) The contiguous zone of the United States is a zone measured 24 nm from the territorial sea baseline and is contiguous to the territorial sea of the United States, including the Commonwealth of Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, the Commonwealth of the Northern Mariana Islands, and any other territory or possession over which the United States exercises sovereignty. (Presidential Proclamation No. 7219. August 2, 1999.) Under customary law as reflected in UNCLOS, the U.S. may exercise the control necessary to prevent infringement of its customs, fiscal, immigration, or sanitary laws and regulations within its territory or territorial sea, and to punish infringement of these laws and regulations committed within its territory or territorial sea. The United States may also prescribe and enforce laws against foreign flagged vessels and nationals to protect the underwater cultural heritage to the outer boundary of the contiguous zone (24 nm).

**Exclusive Economic Zone**

(503) The exclusive economic zone of the United States extends no more than 200 nm from the territorial sea baseline and is adjacent to the 12 nm territorial sea of the United States, including the Commonwealth of Puerto Rico, Guam, American Samoa, the U.S. Virgin

Islands, the Commonwealth of the Northern Mariana Islands, and any other territory or possession over which the United States exercises sovereignty. (Presidential Proclamation No. 5030 of March 10, 1983 and Federal Register, volume 60 - number 163, August 23, 1995, "Exclusive Economic Zone and Maritime Boundaries: Notice of Limits") As such, the exclusive economic zone overlaps the 12 nm - 24 nm contiguous zone.

(504) Within the EEZ, the U.S. has (a) sovereign rights for the purpose of exploring, exploiting, conserving and managing natural resources, whether living and nonliving, of the seabed and subsoil and the superjacent waters and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds; (b) jurisdiction as provided for in international and domestic laws with regard to the establishment and use of artificial islands, installations, and structures, marine scientific research, and the protection and preservation of the marine environment; and (c) other rights and duties provided for under international and domestic laws.

(505) Note: In certain U.S. fisheries laws, the term "exclusive economic zone" ("EEZ") is used. While its outer limit is the same as the EEZ on NOAA charts, the inner limit generally extends landward to the seaward boundary of the coastal states of the U.S.

### Three Nautical Mile Line

(506) The Three Nautical Mile Line, as measured from the territorial sea baseline and previously identified as the outer limit of the U.S. territorial sea, is retained on charts because it continues to be used in certain federal laws.

(507) Note: Since the "coast line," a term used in the Submerged Lands Act, and the baseline are determined using the same criteria under international law, the Three Nautical Mile Line is generally the same as the seaward boundary of states under the Submerged Lands Act. There are exceptions; therefore, the Three Nautical Mile Line does not necessarily depict the seaward limit of states under the Submerged Lands Act.

### Natural Resources Boundary

(508) The 9 M Natural Resources Boundary is the seaward limit of the submerged lands of Puerto Rico, Texas, and the Gulf coast of Florida. It coincides with the inner limit of the U.S. outer continental shelf under the Outer Continental Shelf Lands Act.

### Marine Protected Area (MPA)

(509) Marine Protected Areas (MPAs) are particular places in ocean, coastal and estuarine ecosystems where vital natural and cultural resources are given greater protection than in surrounding waters. MPAs have been established in the U.S. for more than a century. Currently, there are over 1,600 MPAs in U.S. marine waters and the Great Lakes, with levels of protection ranging from a few "no-take" areas that prohibit all extractive uses, to the more common multiple use areas that allow vessel access, anchoring, fishing and non-consumptive activities. MPAs are managed by dozens of Federal, state, tribal and local authorities. For detailed information on MPA locations, types, interactive map, purposes and legal restrictions, visit http://mpa.gov/.

### Archaeological Resource Preservation

(510) Under Federal and State laws it is illegal to destroy, deface, collect, transport, sell or trade archaeological, cultural, submerged and historic resources without authorization. Applicable laws include, but are not limited to, the Historic Sites Act, the Archaeological Resource Protection Act, the National Historic Preservation Act, the Abandoned Shipwreck Act, and the Sunken Military Craft Act. These laws protect archaeological resources on lands administered by the National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management, and National Marine Sanctuaries as well as State, private and Native lands. For further information, consult individual state archaeology offices at http://www.uiowa.edu/~osa/nasa/.

## U.S. GOVERNMENT AGENCIES PROVIDING MARITIME SERVICES

## DEPARTMENT OF AGRICULTURE

### Animal and Plant Health Inspection Service

(511) The Animal and Plant Health Inspection Service is responsible for protecting the Nation's animal population, food and fiber crops, and forests from invasion by foreign pests. They administer agricultural quarantine and restrictive orders issued under authority provided in various acts of Congress. The regulations prohibit or restrict the importation or interstate movement of live animals, meats, animal products, plants, plant products, soil, injurious insects, and associated items that may introduce or spread plant pests and animal diseases which may be new to or not widely distributed within the United States or its territories. Inspectors examine imports at ports of entry as well as the vessel, its stores, and crew or passenger baggage.

(512) The Service also provides an inspection and certification service for exporters to assist them in meeting the quarantine requirements of foreign countries. (See Appendix A for a list of ports where agricultural inspectors are located and inspections conducted.)

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration (NOAA)

(513) The National Oceanic and Atmospheric Administration (NOAA) conducts research and gathers data about the global oceans, atmosphere, space, and sun, and applies this knowledge to improve our understanding and stewardship of the environment.

(514) NOAA provides services to the nation and the public through five major organizations: the National Ocean Service, the National Weather Service, the National Marine Fisheries Service, the National Environmental Satellite, Data and Information Service, and NOAA Research; and numerous special program units. In addition, NOAA research and operational activities are supported by the Nation's seventh uniformed service, the NOAA Corps, a commissioned officer corps of men and women who operate NOAA ships and aircraft, and serve in scientific and administrative positions.

### National Ocean Service (NOS)

(515) The National Ocean Service's primary concern is the health and safety of our Nation's coastal and oceanic environment. Within NOS, the **Office of Coast Survey** is responsible for producing and maintaining the suite of over 1000 nautical charts, and the Coast Pilots that cover the coastal waters of the U.S. and its territories. Nautical charts are published primarily for the use of the mariner, but serve the public interest in many other ways. Cartographers in Coast Survey receive and compile information from a variety of government and non-governmental sources for portrayal on nautical charts and the Coast Pilots. In addition, Coast Survey hydrographers, as well as private contractors, conduct new surveys that are used to update these products. The principal facilities of Coast Survey are located at NOAA headquarters in Silver Spring, MD, Norfolk, VA (Marine Operations Center Atlantic), and Seattle, WA (Marine Operations Center Pacific). NOAA ships are based at the marine centers.

(516) **Sales agents** for NOAA nautical charts and the Coast Pilot are located in many U.S. ports and in some foreign ports. Five regional catalogs showing the limits of NOAA nautical charts are available free from: FAA/National Aeronautical Navigation Services. (See Appendix A for list of catalogs and address for ordering, or call 800-638-8972.) Local authorized sales agents can be located using the query form at http://aeronav.faa.gov/agents.asp. This form is used to locate aeronautical and nautical sales agents so the "Nautical Agents" button must be selected.

(517) The **Center for Operational Oceanographic Products and Services (CO-OPS)** collects and distributes observations and predictions of water levels and currents to ensure safe, efficient and environmentally sound maritime commerce. Users can find a variety of information, including water level, tidal predictions, observed water levels and currents data, tides online (including a listing of all water level stations currently in storm surge mode), sea levels online, Great Lakes online, and PORTS at http://www.tidesandcurrents.noaa.gov.

(518) **PORTS® (Physical Oceanographic Real-Time System)** is a centralized data acquisition and dissemination system that provides real-time water levels, currents, and other oceanographic and meteorological data from bays and harbors. This information is provided via telephone voice response (for most ports) and the Internet. Accurate real-time water level information allows U.S. port authorities and maritime shippers to make sound decisions regarding loading of tonnage (based on available bottom clearance), maximizing loads, and limiting passage times, without compromising safety.

(519) There are PORTS in 20 areas of the United States. The table below lists the ports and the telephone number for voice access to the PORTS data.

| Port or Waterway | Voice Access Phone Number |
|---|---|
| Anchorage, AK | 1-866-257-6787 |
| Cherry Point, WA | 1-888-817-7794 |
| Chesapeake Bay | 1-866-247-6787 |
| Columbia River, Lower | 1-888-537-6787 |
| Delaware River and Bay | 1-866-307-6787 |
| Gulfport, MS | 1-888-257-1858 |
| Houston/Galveston | 1-866-447-6787 |
| Lake Charles | 1-888-817-7692 |
| Los Angeles/Long Beach | not available |
| Mississippi River | 1-888-817-7767 |
| Mobile Bay, AL | 1-877-847-6787 |
| Narragansett Bay, RI | 1-866-757-6787 |
| New Haven, CT | 1-888-807-6787 |
| New York/New Jersey Harbor | 1-866-217-6787 |
| Pascagoula, MS | 1-888-257-1857 |
| Sabine Neches | 1-888-257-1859 |
| San Francisco Bay | 1-866-727-6787 |
| Soo Locks, MI | 1-301-713-9596 (toll) |
| Tacoma, WA | 1-888-607-6787 |
| Tampa Bay, FL | 1-866-827-6787 |

(520) **Tide Tables** are computed annually by NOAA and published in October for the upcoming year. These tables include predicted times and heights of high and low waters for every day in the year for a number of reference stations and differences for obtaining similar predictions for numerous other places. They also include other useful information such as a method of obtaining heights of tide at any time, local mean time of sunrise and sunset for various latitudes, reduction of local mean time to standard time, and time of moonrise and moonset for various ports.

(521) **Caution**–When using the Tide Tables, slack water should not be confused with high or low water. For

ocean stations there is usually little difference between the time of high or low water and the beginning of ebb or flood currents; but for places in narrow channels, landlocked harbors, or on tidal rivers, the time of slack current may differ by several hours from the time of high or low water. The relation of the times of high or low water to the turning of the current depends upon a number of factors, so that no simple general rule can be given. (To obtain the times of slack water, refer to the Tidal Current Tables.)

(522) **Tidal Current Tables** for the coasts of the United States are computed annually by NOAA and published in October for the upcoming year. These tables include daily predictions of the times of slack water and the times and velocities of strength of flood and ebb currents for a number of waterways, together with differences for obtaining predictions for numerous other places. Also included is other useful information such as a method for obtaining the velocity of current at any time, duration of slack, coastal tidal currents, wind currents, combination of currents and current diagrams. Some information on the Gulf Stream is included in the tables for the Atlantic coast.

(523) NOAA Tide Tables and Tidal Current Tables for U.S. waters contain the text of all active Notice to Mariners which affect the accuracy and use of tide and tidal current predictions they contain. (See Appendix A for list of NOAA Tide and Tidal Current Tables.)

(524) Many local publishers and printers throughout the country publish regional and localized tide and tidal current predictions in booklet, calendar and other formats. The data printed in these local and regional publications is, in many cases, obtained directly from NOAA. For availability of localized prediction tables consult marinas and marine supply companies in your area.

### National Weather Service (NWS)

#### National Data Buoy Center Meteorological Buoys

(525) The National Data Buoy Center (NDBC) deploys moored meteorological buoys which provide weather data directly to the mariner as well as to marine forecasters. In 1998, a disproportionate number of these buoys have had mooring failures due to abrasion of the nylon mooring line by trawls, tow lines, etc.

(526) These buoys have a watch circle radius (WCR) of 2,000 to 4,000 yards from assigned position (AP). In addition, any mooring in waters deeper than 1,000 feet will have a floating "loop" or catenary that may be as little as 500 feet below the surface. This catenary could be anywhere within the buoy's WCR. Any underwater activity within this radius may contact the mooring causing a failure.

(527) To avoid cutting or damaging a moor, mariners are urged to exercise extreme caution when navigating in the vicinity of meteorological buoys and to remain well clear of the watch circle. If a mooring is accidentally contacted or cut, please notify NDBC at 228-688-2835 or 228-688-2436.

(528) For further information relating to these buoys visit http://seaboard.ndbc.noaa.

#### Marine Weather Forecasts

(529) The National Weather Service provides marine weather forecasts and warnings for the U.S. coastal waters, the Great Lakes, offshore waters, and high seas areas. Scheduled marine forecasts are issued four times daily from **National Weather Service Offices** with local areas of responsibility, around the United States, Guam, American Samoa, and Puerto Rico. (See Appendix A for National Weather Service Offices located in the area covered by this Coast Pilot.)

(530) Typically, the forecasts contain information on wind speed and direction, wave heights, visibility, weather, and a general synopsis of weather patterns affecting the region. The forecasts are supplemented with special marine warnings and statements, radar summaries, marine observations, small-craft advisories, gale warnings, storm warnings and various categories of tropical cyclone warnings e.g., tropical depression, tropical storm and hurricane warnings. Specialized products such as coastal flood, seiche, and tsunami warnings, heavy surf advisories, low water statements, ice forecasts and outlooks, and lake shore warnings and statements are issued as necessary. (For further information, go to http://www.weather.gov/om/marine/home.htm.)

(531) The principal means of disseminating marine weather services and products in coastal areas is **NOAA Weather Radio**. This network of more than 900 transmitters, covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific Territories, is operated by the NWS and provides continuous broadcasts of weather information for the general public. These broadcasts repeat recorded messages every 4 to 6 minutes. Messages are updated periodically, usually every 2-3 hours and amended as required to include the latest information. When severe weather threatens, routine transmissions are interrupted and the broadcast is devoted to emergency warnings. (See Appendix A for NOAA Weather Radio Stations covered by this Coast Pilot.)

(532) In coastal areas, the programming is tailored to the needs of the marine community. Each coastal marine forecast covers a specific area. For example, "Cape Henlopen to Virginia Beach, out 20 miles." The broadcast range is about 40 miles from the transmitting antenna site, depending on terrain and quality of the receiver used. When transmitting antennas are on high ground, the range is somewhat greater, reaching 60 miles or more. Some receivers are equipped with a warning alert device that can be turned on by means of a tone signal controlled by the NWS office concerned. This signal is transmitted for 13 seconds preceding an announcement of a severe weather warning.

# NATIONAL WEATHER SERVICE COASTAL WARNING DISPLAYS

DAYTIME SIGNALS

SMALL CRAFT ADVISORY | GALE WARNING | STORM WARNING | HURRICANE WARNING

NIGHT (LIGHT) SIGNALS

SMALL CRAFT ADVISORY | GALE WARNING | STORM WARNING | HURRICANE WARNING

**SMALL CRAFT ADVISORY**: An advisory issued by coastal and Great Lakes Weather Forecast Offices (WFO) for areas included in the Coastal Waters Forecast or Nearshore Marine Forecast (NSH) products. Thresholds governing the issuance of small craft advisories are specific to geographic areas. A Small Craft Advisory may also be issued when sea or lake ice exists that could be hazardous to small boats. There is no precise definition of a small craft. Any vessel that may be adversely affected by Small Craft Advisory criteria should be considered a small craft. Other considerations include the experience of the vessel operator, and the type, overall size, and sea worthiness of the vessel. There is no legal definition of "small craft". The Small Craft Advisory is an advisory in Coastal Waters and Nearshore forecasts for sustained winds, frequent gusts, or sea/wave conditions, exceeding defined thresholds specific to geographic areas. A Small Craft Advisory may also be issued when sea or lake ice exists that could be hazardous to small boats.

Eastern (ME to SC, Lake Erie, Lake Ontario) – Sustained winds or frequent gusts ranging between 25 and 33 knots (except 20 to 25 knots, lower threshold area dependent, to 33 knots for harbors, bays, etc.) and/or seas or waves 5 to 7 feet and greater, area dependent.

Central (MN to OH) – Sustained winds or frequent gusts (on the Great Lakes) between 22 and 33 knots inclusive, and/or seas or waves greater than 4 feet.

Southern (GA to TX and Caribbean) – Sustained winds of 20 to 33 knots, and/or forecast seas 7 feet or greater that are expected for more than 2 hours.

Western (WA..CA) - Sustained winds of 21 to 33 knots, potentially in combination with wave heights exceeding 10 feet (or wave steepness values exceeding local thresholds).

Alaska (AK) – Sustained winds or frequent gusts of 23 to 33 knots. A small craft advisory for rough seas may be issued for sea/wave conditions deemed locally significant, based on user needs, and should be no lower than 8 feet.

Hawaii (HI), Samoa – Sustained winds 25 knots or greater and seas 10 feet or greater.

Guam and the Northern Mariana Islands – Sustained winds 22 to 33 knots and/or combined seas of 10 feet or more. "Frequent gusts"are typically long duration conditions (greater than 2 hours).

For a list of NWS Weather Offices by Region, refer to the following website: http://www.nws.noaa.gov/organization.php

**GALE WARNING**: To indicate winds within the range 34 to 47 knots are forecast for the area.

**STORM WARNING**: To indicate winds 48 knots and above, no matter how high the speed, are forecast for the area. However, if the winds are associated with a tropical cyclone (hurricane), the STORM WARNING indicates that winds within the range 48-63 knots are forecast.

**HURRICANE WARNING**: Issued only in connection with a tropical cyclone (hurricane) to indicate that winds 64 knots and above are forecast for the area.

NOTE: A "HURRICANE WATCH" is an announcement issued by the National Weather Service via press and television broadcasts whenever a tropical storm or hurricane becomes a threat to a coastal area. The "Hurricane Watch" announcement is not a warning, rather it indicates that the hurricane is near enough that everyone in the area covered by the "Watch" should listen to their radios for subsequent advisories and be ready to take precautionary action in case hurricane warnings are issued.

NOTE: A SPECIAL MARINE WARNING is issued whenever a severe local storm or strong wind of brief duration is imminent and is not covered by existing warnings or advisories. No visual displays will be used in connection with the Special Marine Warning Bulletin; boaters will be able to receive thesespecial warnings by keeping tuned to a NOAA Weather Radio station or to Coast Guard and commercial radio stations that transmit marine weather information.

(533) Marine weather warnings are displayed to small-craft operators and others within sight of the shore by the flags, pennants and lights of the **Coastal Warning Display** program. These displays are meant to warn the public of approaching storm conditions and visually communicate that citizens should take personal responsibility for individual safety in the face of an approaching storm. Anyone observing the signals displayed by the program is urged to tune to the National Weather Service radio broadcasts for the latest information. (See **National Weather Service Coastal Warning Displays**, following, for additional information.)

(534) NWS marine weather products are also disseminated to marine users through the broadcast facilities of the Coast Guard, Navy, and commercial marine radio stations. Details on these broadcasts including times, frequencies, and broadcast content are listed on the NWS internet site, **Marine Product Dissemination Information**, http://www.nws.noaa.gov/om/marine/home.htm. For marine weather services in the coastal areas, the NWS publishes a series of Marine Weather Services Charts showing locations of NOAA Weather Radio stations, sites, telephone numbers of recorded weather messages and NWS offices, and other useful marine weather information.

(535) Ships of all nations share equally in the effort to report weather observations. These reports enable meteorologists to create a detailed picture of wind, wave, and weather patterns over the open waters that no other data source can provide and upon which marine forecasts are based. The effectiveness and reliability of these forecasts and warnings plus other services to the marine community are strongly linked to the observations received from mariners. There is an especially urgent need for ship observations in the coastal waters, and the NWS asks that these be made and transmitted whenever possible. Many storms originate and intensify in coastal areas. There may be a great difference in both wind direction and speed between the open sea, the offshore waters, and on the coast itself.

(536) Information on how ships, commercial fishermen, offshore industries, and others in the coastal zone may participate in the marine observation program is available from **National Weather Service Port Meteorological Officers (PMOs)**. Port Meteorological Officers are located in major U.S. port cities where they visit ships in port to assist masters and mates with the weather observation program, provide instruction on the interpretation of weather charts, calibrate barometers and other meteorological instruments, and discuss marine weather communications and marine weather requirements affecting the ships' operations. (For further information on the Voluntary Observing Ship Program and Port Meteorological Officers, go to http://www.vos.noaa.gov.)

### Space Environment Center (SEC)

(537) The Space Environment Center disseminates space weather alerts and forecasts (information concerning solar activity, radio propagation, etc.).

(538) For general information, see Appendix A for address and phone number.

### National Environmental Satellite, Data, and Information Service (NESDIS)

(539) Among its functions, NESDIS archives, processes, and disseminates the non-realtime meteorological and oceanographic data collected by government agencies and private institutions. Marine weather observations are collected from ships at sea on a voluntary basis. About one million observations are received annually at NESDIS's National Climatic Center. They come from vessels representing every maritime nation. These observations, along with land data, are returned to the mariners in the form of climatological summaries and atlases for coastal and ocean areas. They are available in such NOAA publications as the **U.S. Coast Pilot, Mariners Weather Log**, and **Local Climatological Data, Annual Summary**. They also appear in the National Geospatial-Intelligence Agency's **Pilot Chart Atlases** and **Sailing Directions Planning Guides**.

## DEPARTMENT OF DEFENSE

### National Geospatial-Intelligence Agency (NGA)

(540) The National Geospatial-Intelligence Agency provides hydrographic, navigational, topographic, and geodetic data, charts, maps, and related products and services to the Armed Forces, other Federal Agencies, the Merchant Marine and mariners in general. Publications include Sailing Directions, List of Lights, Distances Between Ports, Radio Navigational Aids, International Code of Signals, American Practical Navigator (Bowditch), and Notice to Mariners. (See National Geospatial-Intelligence Agency Procurement Information in Appendix A.)

### U.S. Army Corps of Engineers (USACE)

(541) The U.S. Army Corps of Engineers has charge of the improvement of the rivers and harbors of the United States and of miscellaneous other civil works which include the administration of certain Federal laws enacted for the protection and preservation of navigable waters of the United States; the establishment of regulations for the use, administration, and navigation of navigable waters; the establishment of harbor lines; the removal of sunken vessels obstructing or endangering navigation; and the granting of permits for structures or operations in navigable waters, and for discharges and deposits of dredged and fill materials in these waters.

(542) **Restricted areas** in most places are defined and regulations governing them are established by the U.S.

Army Corps of Engineers. The regulations are enforced by the authority designated in the regulations, and the areas are shown on the large-scale charts of NOS. Copies of the regulations may be obtained at the District offices of the U.S. Army Corps of Engineers. The regulations also are included in the appropriate Coast Pilot.

(543) Information concerning the various ports, improvements, channel depths, navigable waters, and the condition of the Intracoastal Waterways in the areas under their jurisdiction may be obtained direct from the District Engineer Offices. (See Appendix A for addresses.)

(544) The U.S. Army Corps of Engineers has general supervision of location, construction, and manner of maintenance of all **fishtraps,** weirs, pounds, or other fishing structures in the navigable waters of the United States. Where State and/or local controls are sufficient to regulate these structures, including that they do not interfere with navigation, the U.S. Army Corps of Engineers leaves such regulation to the State or local authority. (See **33 CFR 330** (not carried in this Pilot) for applicable Federal regulations.) Construction permits issued by the Engineers specify the lights and signals required for the safety of navigation.

(545) **Fish havens**, artificial reefs constructed to attract fish, can be established in U.S. coastal waters only as authorized by a U.S. Army Corps of Engineers permit; the permit specifies the location, extent, and depth over these mounds of rubble.

### U.S. Naval Observatory

(546) The United States Naval Observatory (USNO) provides a wide range of astronomical data and products, and serves as the official source of time for the U.S. Department of Defense and a Standard of time for the entire United States. The USNO provides earth orientation products such as the latest 24-hour and 48-hour sets of GPS satellite orbits, the latest determinations and predictions for polar motion, and information for GPS users. The USNO also maintains a reference for precise time (USNO Master Clock) and monitors the GPS constellation. For extensive information on the USNO products available, visit http://www.usno.navy.mil/ or contact by telephone at 202-762-1467.

## DEPARTMENT OF HEALTH AND HUMAN SERVICES

### Food and Drug Administration (FDA)

(547) Under the provisions of the Control of Communicable Diseases Regulations (**21 CFR 1240**) and Interstate Conveyance Sanitation Regulations (**21 CFR 1250**), vessel companies operating in interstate traffic shall obtain potable water for drinking and culinary purposes only at watering points found acceptable to the Food and Drug Administration. Water supplies used in watering point operations must also be inspected to determine compliance with applicable Interstate Quarantine Regulations (**42 CFR 72**). These regulations are based on authority contained in the Public Health Service Act (PL 78–410). Penalties for violation of any regulation prescribed under authority of the Act are provided for under Section 368 (42 USC 271) of the Act.

### Vessel Watering Points

(548) FDA annually publishes a list of Acceptable Vessel Watering Points. This list is available from most FDA offices or from Interstate Travel Sanitation Subprogram Center for Food Safety and Applied Nutrition, FDA (HFF-312), 200 C Street SW., Washington, DC 20204. Current status of watering points can be ascertained by contacting any FDA office. (See Appendix A for addresses.)

### Public Health Service

(549) The Public Health Service administers foreign quarantine procedures at U.S. ports of entry.

(550) All vessels arriving in the United States are subject to public health inspection. Vessels subject to routine boarding for quarantine inspection are only those which have had on board during the 15 days preceding the date of expected arrival or during the period since departure (whichever period of time is shorter) the occurrence of any death or ill person among passengers or crew (including those who have disembarked or have been removed). The master of a vessel must report such occurrences immediately by radio to the quarantine station at or nearest the port at which the vessel will arrive.

(551) In addition, the master of a vessel carrying 13 or more passengers must report by radio 24 hours before arrival the number of cases (including zero) of diarrhea in passengers and crew recorded in the ship's medical log during the current cruise. All cases that occur after the 24 hour report must also be reported not less than 4 hours before arrival.

(552) Ill person means person who:

(553) 1. Has a temperature of 100°F (or 38°C) or greater, accompanied by a rash, glandular swelling, or jaundice, or which has persisted for more than 48 hours; or

(554) 2. Has diarrhea, defined as the occurrence in a 24 hour period of three or more loose stools or of a greater than normal (for the person) amount of loose stools.

(555) Vessels arriving at ports under control of the United States are subject to sanitary inspection to determine whether measures should be applied to prevent the introduction, transmission, or spread of communicable disease.

(556) Specific public health laws, regulations, policies, and procedures may be obtained by contacting U.S. Quarantine Stations, U.S. Consulates or the Chief Program Operations, Division of Quarantine, Centers for Disease Control, Atlanta, Ga. 30333. (See Appendix A for addresses of U.S. Public Health Service Quarantine Stations.)

## DEPARTMENT OF HOMELAND SECURITY

### U.S. Citizenship and Immigration Services

(557) The Immigration and Naturalization Service administers the laws relating to admission, exclusion, and deportation of aliens, the registration and fingerprinting of aliens, and the naturalization of aliens lawfully resident in the United States.

(558) The designated ports of entry for aliens are divided into three classes. Class A is for all aliens. Class B is only for aliens who at the time of applying for admission are lawfully in possession of valid resident aliens' border-crossing identification cards or valid nonresident aliens' border-crossing identification cards or are admissible without documents under the documentary waivers contained in **8 CFR 212.1(a)**. Class C is only for aliens who are arriving in the United States as crewmen as that term is defined in Section 101(a) (10) of the Immigration and Nationality Act. (The term crewman means a person serving in any capacity on board a vessel or aircraft.) No person may enter the United States until he has been inspected by an immigration officer. A list of the offices covered by this Coast Pilot is given in Appendix A.

### U.S. Coast Guard

(559) The Coast Guard has among its duties the enforcement of the laws of the United States on the high seas and in coastal and inland waters of the U.S. and its possessions; enforcement of navigation and neutrality laws and regulations; establishment and enforcement of navigational regulations upon the Inland Waters of the United States, including the establishment of a demarcation line separating the high seas from waters upon which U.S. navigational rules apply; administration of the Oil Pollution Act of 1990, as amended; establishment and administration of vessel anchorages; approval of bridge locations and clearances over navigable waters; administration of the alteration of obstructive bridges; regulation of drawbridge operations; inspection of vessels of the Merchant Marine; admeasurement of vessels; documentation of vessels; preparation and publication of merchant vessel registers; registration of stack insignia; port security; issuance of Merchant Marine licenses and documents; search and rescue operations; investigation of marine casualties and accidents, and suspension and revocation proceedings; destruction of derelicts; operation of aids to navigation; publication of Light Lists and Local Notices to Mariners; and operation of ice-breaking facilities.

(560) The Coast Guard, with the cooperation of coast radio stations of many nations, operates the **Automated Mutual-assistance Vessel Rescue System (AMVER).** It is an international maritime mutual assistance program which provides important aid to the development and coordination of search and rescue (SAR) efforts in many offshore areas of the world. Merchant ships of all nations making offshore passages are encouraged to voluntarily send movement (sailing) reports and periodic position reports to the AMVER Center at Coast Guard New York via selected radio stations. Information from these reports is entered into an electronic computer which generates and maintains dead reckoning positions for the vessels. Characteristics of vessels which are valuable for determining SAR capability are also entered into the computer from available sources of information.

(561) A worldwide communications network of radio stations supports the AMVER System. Propagation conditions, location of vessel, and traffic density will normally determine which station may best be contacted to establish communications. To ensure that no charge is applied, all AMVER reports should be passed through specified radio stations. Those stations which currently accept AMVER reports and apply no coastal station, ship station, or landline charge are listed in each issue of the "AMVER Bulletin" publication. Also listed are the respective International radio call signs, locations, frequency bands, and hours of operation. The "AMVER Bulletin" is available from AMVER Maritime Relations, U.S. Coast Guard, Battery Park Building New York, NY 10004, TEL: 212-668-7764, FAX 212-668-7684. Although AMVER reports may be sent through nonparticipating stations, the Coast Guard cannot reimburse the sender for any charges applied.

(562) Information concerning the predicted location and SAR characteristics of each vessel known to be within the area of interest is made available upon request to recognized SAR agencies of any nation or vessels needing assistance. Predicted locations are only disclosed for reasons related to marine safety.

(563) Benefits of AMVER participation to shipping include: (1) improved chances of aid in emergencies, (2) reduced number of calls for assistance to vessels not favorably located, and (3) reduced time lost for vessels responding to calls for assistance. An AMVER participant is under no greater obligation to render assistance during an emergency than a vessel who is not participating.

(564) All AMVER messages should be addressed to **Coast Guard New York** regardless of the station to which the message is delivered, except those sent to Canadian stations which should be addressed to **AMVER Halifax** or **AMVER Vancouver** to avoid incurring charges to the vessel for these messages.

(565) Instructions guiding participation in the AMVER System are available in the following languages: Chinese, Danish, Dutch, English, French, German, Greek, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, and Swedish. The AMVER Users Manual is available from: AMVER Maritime Relations; Commander, Atlantic Area, U.S. Coast Guard, Federal Building, 431 Crawford Street, Portsmouth, VA 23704-5004; Commander, Pacific Area, U.S. Coast

Guard, Coast Guard Island, Alameda, CA. 94501-5100; and at U.S. Coast Guard Sectors in major U.S. ports. Requests for instructions should state the language desired if other than English.

(566) For AMVER participants bound for U.S. ports there is an additional benefit. AMVER participation via messages which include the necessary information is considered to meet the requirements of 33 CFR 160. (See **160.201,** chapter 2, for rules and regulations.)

(567) **AMVER Reporting Required.** U.S. Maritime Administration regulations effective August 1, 1983, state that certain U.S. flag vessels and foreign flag "War Risk" vessels must report and regularly update their voyages to the AMVER Center. This reporting is required of the following: (a) U.S. flag vessels of 1,000 gross tons or greater, operating in foreign commerce; (b) foreign flag vessels of 1,000 gross tons or greater, for which an Interim War Risk Insurance Binder has been issued under the provisions of Title XII, Merchant Marine Act, 1936.

(568) Details of the above procedures are contained in the AMVER Users Manual. The system is also published in NGA Pub. 117.

(569) Search and Rescue Operation procedures are contained in the International Maritime Organization (IMO) SAR Manual (MERSAR). U.S. flag vessels may obtain a copy of MERSAR from local Coast Guard Sector Offices or Marine Safety Units or by writing to U.S. Coast Guard (CG-534), Washington, DC 20593-0001. Other flag vessels may purchase MERSAR directly from IMO.

(570) The Coast Guard conducts and/or coordinates **search and rescue** operations for surface vessels and aircraft that are in distress or overdue. (See Distress Signals and Communication Procedures this chapter.)

(571) **Documentation:** Issuance of certificates of registry (more commonly referred to as Certificates of Documentation) with endorsements indicating eligibility of vessels that measure at least 5 net tons, to engage in various trades for commercial vessels and certain recreational vessels that are numbered either by the Coast Guard or by a State having an approved numbering system (the latter is the most common), and the administration of the various laws pertaining thereto, are functions of the Coast Guard and specifically the National Vessel Documentation Center. Owners of vessels may obtain the necessary information from the National Vessel Documentation Center either by mail to the National Vessel Documentation Center, 792 T.J. Jackson Drive, Falling Waters, WV 25419-9502; via toll free number 800-799-8362; or via the Internet: http://www.uscg.mil/hq/cg5/nvdc.

### U.S. Customs and Border Protection

(572) The U.S. Customs and Border Protection administers certain laws relating to:

(573) • entry and clearance of vessels and permits for certain vessel movements between points in the United States

(574) • prohibitions against coastwise transportation of passengers and merchandise

(575) • salvage

(576) • dredging and towing by foreign vessels

(577) • certain activities of vessels in the fishing trade

(578) • regular and special tonnage taxes on vessels

(579) • landing and delivery of foreign merchandise (including unlading, appraisement, lighterage, drayage, warehousing, and shipment in bond)

(580) • collection of customs duties, including duty on imported pleasure boats and yachts and 50% duty on foreign repairs to American vessels engaged in trade

(581) • customs treatment of sea and ship's stores while in port and the baggage of crewmen and passengers

(582) • illegally imported merchandise

(583) • remission of penalties or forfeiture if customs or navigation laws have been violated.

(584) The Customs Service also cooperates with many other Federal agencies in the enforcement of statutes they are responsible for. Customs districts and ports of entry, including customs stations, are listed in Appendix A.

(585) The Customs and Border Protection office may issue, without charge, a **cruising license**, normally valid for one year, to a yacht of a foreign country which has a reciprocal agreement with the United States. A foreign yacht holding a cruising license is exempt from having to undergo formal entry and clearance procedures such as filing manifests and obtaining permits to proceed as well as from payment of tonnage tax and entry and clearance fees at all but the first port of entry. These vessels shall not engage in trade, violate the laws of the United States, visit a vessel not yet inspected by a Customs Agent and does, within 24 hours of arrival at each port or place in the United States, report the fact of arrival to the nearest customhouse. Countries which have reciprocal agreements granting these privileges to U.S. yachts are:

| | |
|---|---|
| Argentina | Honduras |
| Australia | Ireland |
| Austria | Italy |
| Bahama Islands | Jamaica |
| Belguim | Liberia |
| Bermuda | Marshall Islands |
| Canada | Netherlands |
| Denmark | New Zealand |
| Finland | Norway |
| France | Sweden |
| Germany | Switzerland |
| Great Britain | Turkey |
| Greece | |

(586) Further information concerning cruising licenses may be obtained from the headquarters port for the customs district in which the license is desired or at http://www.cbp.gov. U.S. yacht owners planning cruises to foreign ports may contact the nearest customs district headquarters as to customs requirements.

## ENVIRONMENTAL PROTECTION AGENCY (EPA)

(587) The U.S. Environmental Protection Agency provides coordinated governmental action to assure the protection of the environment by abating and controlling pollution on a systematic basis. The ocean dumping permit program of the Environmental Protection Agency provides that except when authorized by permit, the dumping of any material into the ocean is prohibited by the "Marine Protection, Research, and Sanctuaries Act of 1972, Public Law 92–532," as amended (33 USC 1401 et seq.).

(588) Permits for the **dumping of dredged material** into waters of the United States, including the territorial sea, and into ocean waters are issued by the U.S. Army Corps of Engineers. Permits for the dumping of fill material into waters of the United States, including the territorial sea, are also issued by the U.S. Army Corps of Engineers. Permits for the dumping of other material in the territorial sea and ocean waters are issued by the Environmental Protection Agency.

(589) U.S. Army Corps of Engineers regulations relating to the above are contained in **33 CFR 323-324**; Environmental Protection Agency regulations are in **40 CFR 220-229**. (See Disposal Sites, this chapter.)

(590) Persons or organizations who want to file for an application for an ocean dumping permit should write the Environmental Protection Agency Regional Office for the region in which the port of departure is located. (See Appendix A for addresses of regional offices and States in the EPA coastal regions.)

(591) The letter should contain the name and address of the applicant; name and address of person or firm; the name and usual location of the conveyance to be used in the transportation and dumping of the material involved; a physical description where appropriate; and the quantity to be dumped and proposed dumping site.

(592) Everyone who writes EPA will be sent information about a final application for a permit as soon as possible. This final application is expected to include questions about the description of the process or activity giving rise to the production of the dumping material; information on past activities of applicant or others with respect to the disposal of the type of material involved; and a description about available alternative means of disposal of the material with explanations about why an alternative is thought by the applicant to be inappropriate.

## FEDERAL COMMUNICATIONS COMMISSION (FCC)

(593) The Federal Communications Commission controls non-Government radio communications in the United States, Guam, Puerto Rico, and the Virgin Islands. Commission inspectors have authority to board ships to determine whether their radio stations comply with international treaties, Federal Laws, and Commission regulations. The commission has field offices in the principal U.S. ports. (See Appendix A for addresses.) Information concerning ship radio regulations and service documents may be obtained from the Federal Communications Commission, Washington, DC 20554, or from any of the field offices.

# Navigation Regulations

(1) This chapter contains extracts from **Code of Federal Regulations (CFR)** that are of importance to mariners in the area covered by this Coast Pilot. Sections of little value to the mariner are sometimes omitted. Omitted sections are signified by the following [...]

(2) Extracts from the following titles are contained in this chapter.

**Title 15 (15 CFR): Commerce and Foreign Trade**

(3) Part 922, National Marine Sanctuary Program Regulations

**Title 33 (33 CFR): Navigation and Navigable Waters**

(4) Part 26, Vessel Bridge-to-Bridge Radiotelephone Regulations

(5) Part 70, Interference with or Damage to Aids to Navigation

(6) Part 80, COLREGS Demarcation Lines

(7) Part 110, Anchorage Regulations

(8) Part 117, Drawbridge Operation Regulations

(9) Part 157, Rules for the Protection of the Marine Environment relating to Tank Vessels Carrying Oil in Bulk

(10) Part 160, Ports and Waterways Safety-General

(11) Part 162, Inland Waterways Navigation Regulations

(12) Part 164, Navigation Safety Regulations (in part)

(13) Part 165, Regulated Navigation Areas and Limited Access Areas

(14) Part 167, Offshore Traffic Separation Schemes

(15) Part 169, Mandatory Ship Reporting Systems

(16) Part 207, Navigation Regulations

(17) Part 334, Danger Zones and Restricted Area Regulations

**Title 40 (40 CFR): Protection of Environment**

(18) Part 140, Marine Sanitation Device Standard

**Title 50 (50 CFR): Wildlife and Fisheries**

(19) Part 222, General Endangered and Threatened Marine Species

(20) Part 224, Endangered Marine and Anadromous Species

(21) Part 226, Designated Critical Habitat

**Note**

(22) These regulations can only be amended by the enforcing agency or other authority cited in the regulations. Accordingly, requests for changes to these regulations should be directed to the appropriate agency for action. In those regulations where the enforcing agency is not cited or is unclear, recommendations for changes should be directed to the following Federal agencies for action:

(23) **National Oceanic and Atmospheric Administration:** (15 CFR 922);

(24) **U.S. Coast Guard:** (33 CFR 26, 80, 110, 117, 157, 160, 162, 164, 165, 167, and 169);

(25) **U.S. Army Corps of Engineers:** (33 CFR 207 and 334);

(26) **Environmental Protection Agency:** (40 CFR 140);

(27) **National Marine Fisheries Service, National Oceanic and Atmospheric Administration:** (50 CFR 222, 224, and 226).

## TITLE 15–COMMERCE AND FOREIGN TRADE

## Part 922–National Marine Sanctuary Program Regulations

## Subpart A–General

**§922.1 Applicability of regulations.**

(28) Unless noted otherwise, the regulations in subparts A, D and E apply to all thirteen National Marine Sanctuaries for which site specific regulations appear in Subparts F through R, respectively. Subparts B and C apply to the site evaluation list and to the designation of future Sanctuaries.

**§922.2 Mission, goals, and special policies.**

(29) (a) In accordance with the standards set forth in title III of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended, also known as the National Marine Sanctuaries Act (Act) the mission of the National Marine Sanctuary program (Program) is to identify, designate and manage areas of the marine environment of special national, and in some cases international, significance due to their conservation, recreational, ecological, historical, research, educational, or aesthetic qualities.

(30) (b) The goals of the Program are to carry out the mission to:

(31) (1) Identify and designate as National Marine Sanctuaries areas of the marine environment which are of special national significance;

(32) (2) Provide authority for comprehensive and coordinated conservation and management of these marine areas, and activities affecting them, in a manner which complements existing regulatory authorities;

(33) (3) Support, promote, and coordinate scientific research on, and monitoring of, the resources of these marine areas, especially long-term monitoring and research of these areas;

(34) (4) Enhance public awareness, understanding, appreciation, and wise use of the marine environment;

(35) (5) Facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;

(36) (6) Develop and implement coordinated plans for the protection and management of these areas with appropriate Federal agencies, State and local governments, Native American tribes and organizations, international organizations, and other public and private interests concerned with the continuing health and resilience of these marine areas;

(37) (7) Create models of, and incentives for, ways to conserve and manage these areas;

(38) (8) Cooperate with global programs encouraging conservation of marine resources; and

(39) (9) Maintain, restore, and enhance living resources by providing places for species that depend upon these marine areas to survive and propagate.

(40) (c) To the extent consistent with the policies set forth in the Act, in carrying out the Program's mission and goals:

(41) (1) Particular attention will be given to the establishment and management of marine areas as National Marine Sanctuaries for the protection of the area's natural resource and ecosystem values; particularly for ecologically or economically important or threatened species or species assemblages, and for offshore areas where there are no existing special area protection mechanisms;

(42) (2) The size of a National Marine Sanctuary, while highly dependent on the nature of the site's resources, will be no larger than necessary to ensure effective management;

(43) (d) Management efforts will be coordinated to the extent practicable with other countries managing marine protected areas;

(44) (e) Program regulations, policies, standards, guidelines, and procedures under the Act concerning the identification, evaluation, registration, and treatment of historical resources shall be consistent, to the extent practicable, with the declared national policy for the protection and preservation of these resources as stated in the National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq., the Archeological and Historical Preservation Act of 1974, 16 U.S.C. 469 et seq., and the Archeological Resources Protection Act of 1979 (ARPA), 16 U.S.C. 470aa et seq. The same degree of regulatory protection and preservation planning policy extended to historical resources on land shall be extended, to the extent practicable, to historical resources in the marine environment within the boundaries of designated National Marine Sanctuaries. The management of historical resources under the authority of the Act shall be consistent, to the extent practicable, with the Federal archeological program by consulting the Uniform Regulations, ARPA (43 CFR part 7) and other relevant Federal regulations. The Secretary of the Interior's Standards and Guidelines for Archeology may also be consulted for guidance. These guidelines are available from the Office of Ocean and Coastal Management at (301) 713-3125.

**§922.3 Definitions.**

(45) Act means title III of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 16 U.S.C. 1431 et seq., also known as the National Marine Sanctuaries Act.

(46) Active Candidate means a site selected by the Secretary from the Site Evaluation List for further consideration for possible designation as a National Marine Sanctuary.

(47) Assistant Administrator means the Assistant Administrator for Ocean Services and Coastal Zone Management, National Oceanic and Atmospheric Administration (NOAA), or designee.

(48) Benthic community means the assemblage of organisms, substrate, and structural formations found at or near the bottom that is periodically or permanently covered by water.

(49) Commercial fishing means any activity that results in the sale or trade for intended profit of fish, shellfish, algae, or corals.

(50) Conventional hook and line gear means any fishing apparatus operated aboard a vessel and composed of a single line terminated by a combination of sinkers and hooks or lures and spooled upon a reel that may be hand or electrically operated, hand-held or mounted. This term does not include bottom longlines.

(51) Cultural resources means any historical or cultural feature, including archaeological sites, historic structures, shipwrecks, and artifacts.

(52) Director means, except where otherwise specified, the Director of the Office of Ocean and Coastal Resource Management, NOAA, or designee.

(53) Exclusive economic zone means the exclusive economic zone as defined in the Magnuson Fishery Conservation and Management Act, 16 U.S. 1801 et seq.

(54) Fish wastes means waste materials resulting from commercial fish processing operations.

(55) Historical resource means any resource possessing historical, cultural, archaeological or paleontological significance, including sites, contextual information, structures, districts, and objects significantly associated

with or representative of earlier people, cultures, maritime heritage, and human activities and events. Historical resources include "submerged cultural resources", and also include "historical properties", as defined in the National Historic Preservation Act, as amended, and its implementing regulations, as amended.

(56) Indian tribe means any American Indian tribe, band, group, or community recognized as such by the Secretary of the Interior.

(57) Injure means to change adversely, either in the long or short term, a chemical, biological or physical attribute of, or the viability of. This includes, but is not limited to, to cause the loss of or destroy.

(58) Lightering means at-sea transfer of petroleum-based products, materials or other matter from vessel to vessel.

(59) Marine means those areas of coastal and ocean waters, the Great Lakes and their connecting waters, and submerged lands over which the United States exercises jurisdiction, including the exclusive economic zone, consistent with international law.

(60) Mineral means clay, stone, sand, gravel, metalliferous ore, non-metalliferous ore, or any other solid material or other matter of commercial value.

(61) National historic landmark means a district, site, building, structure or object designated as such by the Secretary of the Interior under the National Historic Landmarks Program (36 CFR part 65).

(62) National Marine Sanctuary means an area of the marine environment of special national significance due to its resource or human-use values, which is designated as such to ensure its conservation and management.

(63) Person means any private individual, partnership, corporation or other entity; or any officer, employee, agent, department, agency or instrumentality of the Federal Government, of any State or local unit of government, or of any foreign government.

(64) Regional Fishery Management Council means any fishery council established under section 302 of the Magnuson Fishery Conservation and Management Act, 16 U.S.C. 1801 et seq.

(65) Sanctuary quality means any of those ambient conditions, physical-chemical characteristics and natural processes, the maintenance of which is essential to the ecological health of the Sanctuary, including, but not limited to, water quality, sediment quality and air quality.

(66) Sanctuary resource means any living or non-living resource of a National Marine Sanctuary that contributes to the conservation, recreational, ecological, historical, research, educational, or aesthetic value of the Sanctuary, including, but not limited to, the substratum of the area of the Sanctuary, other submerged features and the surrounding seabed, carbonate rock, corals and other bottom formations, coralline algae and other marine plants and algae, marine invertebrates, brine-seep biota, phytoplankton, zooplankton, fish, seabirds, sea turtles and other marine reptiles, marine mammals and historical resources.

(67) Secretary means the Secretary of the United States Department of Commerce, or designee.

(68) Shunt means to discharge expended drilling cuttings and fluids near the ocean seafloor.

(69) Site Evaluation List (SEL) means a list of selected natural and historical resource sites selected by the Secretary as qualifying for further evaluation for possible designation as National Marine Sanctuaries.

(70) State means each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, American Samoa, the United States Virgin Islands, Guam, and any other commonwealth, territory, or possession of the United States.

(71) Subsistence use means the customary and traditional use by rural residents of areas near or in the marine environment for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles; and for barter, if for food or non-edible items other than money, if the exchange is of a limited and non-commercial nature.

(72) Take or taking means:

(73) (1) For any marine mammal, sea turtle, or seabird listed as either endangered or threatened pursuant to the Endangered Species Act, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or injure, or to attempt to engage in any such conduct;

(74) (2) For any other marine mammal, sea turtle, or seabird, to harass, hunt, capture, kill, collect or injure, or to attempt to engage in any such conduct.

(75) For the purpose of both (1) and (2) of this definition, this includes, but is not limited to, to collect any dead or injured marine mammal, sea turtle or seabird, or any part thereof; to restrain or detain any marine mammal, sea turtle or seabird, or any part thereof, no matter how temporarily; to tag any sea turtle, marine mammal or seabird; to operate a vessel or aircraft or to do any other act that results in the disturbance or molestation of any marine mammal, sea turtle or seabird.

(76) Tropical fish means fish or minimal sport and food value, usually brightly colored, often used for aquaria purposes and which lives in a direct relationship with live bottom communities.

(77) Vessel means a watercraft of any description capable of being used as a means of transportation in/on the waters of the Sanctuary.

### §922.4 Effect of National Marine Sanctuary designation.

(78) The designation of a National Marine Sanctuary, and the regulations implementing it, are binding on any person subject to the jurisdiction of the United States. Designation does not constitute any claim to territorial jurisdiction on the part of the United States for designated sites beyond the U.S. territorial sea, and

the regulations implementing the designation shall be applied in accordance with generally recognized principles of international law, and in accordance with treaties, conventions, and other agreements to which the United States is a party. No regulation shall apply to a person who is not a citizen, national, or resident alien of the United States, unless in accordance with:

(79) (a) Generally recognized principles of international law;

(80) (b) An agreement between the United States and the foreign state of which the person is a citizen; or

(81) (c) An agreement between the United States and the flag state of the foreign vessel, if the person is a crew member of the vessel.

## Subpart D–Management Plan Development and Implementation

### §922.30 General.

(82) (a) The Secretary shall implement each management plan, and applicable regulations, including carrying out surveillance and enforcement activities and conducting such research, monitoring, evaluation, and education programs as are necessary and reasonable to carry out the purposes and policies of the Act.

(83) (b) Consistent with Sanctuary management plans, the Secretary shall develop and implement site-specific contingency and emergency-response plans designed to protect Sanctuary resources. The plans shall contain alert procedures and actions to be taken in the event of an emergency such as a shipwreck or an oil spill.

### §922.31 Promotion and coordination of Sanctuary use.

(84) The Secretary shall take such action as is necessary and reasonable to promote and coordinate the use of National Marine Sanctuaries for research, monitoring, and education purposes. Such action may include consulting with Federal agencies, or other persons to promote use of one or more Sanctuaries for research, monitoring and education, including coordination with the National Estuaries Research Reserve System.

## Subpart E–Regulations of General Applicability

### §922.40 Purpose.

(85) The purpose of the regulations in this subpart and in subparts F through R is to implement the designations of the thirteen National Marine Sanctuaries for which site specific regulations appear in subparts F through R, respectively, by regulating activities affecting them, consistent with their respective terms of designation in order to protect, preserve and manage and thereby ensure the health, integrity and continued availability of the conservation, ecological, recreational, research, educational, historical and aesthetic resources and qualities of these areas. Additional purposes of the regulations implementing the designation of the Florida Keys and Hawaiian Islands Humpback Whale National Marine Sanctuaries are found at §§922.160, and 922.180, respectively.

### §922.41 Boundaries.

(86) The boundary for each of the thirteen National Marine Sanctuaries covered by this part is described in subparts F through R, respectively.

### §922.42 Allowed Activities.

(87) All activities (e.g., fishing, boating, diving, research, education) may be conducted unless prohibited or otherwise regulated in subparts F through R, subject to any emergency regulations promulgated pursuant to §§922.44, 922.111(c), 922.186, or 922.196, subject to all prohibitions, regulations, restrictions, and conditions validly imposed by any Federal, State, or local authority of competent jurisdiction, including Federal and State fishery management authorities, and subject to the provisions of section 312 of the National Marine Sanctuaries Act (NMSA), (16 U.S.C. 1431 et seq.). The Assistant Administrator may only directly regulate fishing activities pursuant to the procedure set forth in section 304(a)(5) of the NMSA.

### §922.43 Prohibited or otherwise regulated activities.

(88) Subparts F through R set forth site-specific regulations applicable to the activities specified therein.

### §922.44 Emergency Regulations.

(89) Where necessary to prevent or minimize the destruction of, loss of, or injury to a Sanctuary resource or quality, or minimize the imminent risk of such destruction, loss, or injury, any and all such activities are subject to immediate temporary regulation, including prohibition. The provisions of this section do not apply to the Cordell Bank, Florida Keys, Hawaiian Islands Humpback Whale, Thunder Bay National Marine Sanctuaries. See §§922.111(c), 922.165, and 922.186, 922.196, respectively, or the authority to issue emergency regulations with respect to those sanctuaries.

### §922.45 Penalties.

(90) (a) Each violation of the NMSA or FKNMSPA, any regulation in this part, or any permit issued pursuant thereto, is subject to a civil penalty of not more than $100,000. Each day of a continuing violation constitutes a separate violation.

(91) (b) Regulations setting forth the procedures governing administrative proceedings for assessment of civil penalties, permit sanctions, and denials for enforcement reasons, issuance and use of written warnings, and

release or forfeiture of seized property appear at 15 CFR part 904.

**§922.46 Response costs and damages.**

(92) Under section 312 of the Act, any person who destroys, causes the loss of, or injures any Sanctuary resource is liable to the United States for response costs and damages resulting from such destruction, loss or injury, and any vessel used to destroy, cause the loss of, or injure any Sanctuary resource is liable in rem to the United States for response costs and damages resulting from such destruction, loss or injury.

**§922.47 Pre-existing authorizations or rights and certifications of pre-existing authorizations or rights.**

(93) (a) Leases, permits, licenses, or rights of subsistence use or access in existence on the date of designation of any National Marine Sanctuary shall not be terminated by the Director. The Director may, however, regulate the exercise of such leases, permits, licenses, or rights consistent with the purposes for which the Sanctuary was designated.

(94) (b) The prohibitions listed in subparts F through P of this part do not apply to any activity authorized by a valid lease, permit, license, approval or other authorization in existence on the effective date of Sanctuary designation, or in the case of the Florida Keys National Marine Sanctuary the effective date of the regulations in this subpart P, and issued by any Federal, State or local authority of competent jurisdiction, or by any valid right of subsistence use or access in existence on the effective date of Sanctuary designation, or in the case of the Florida Keys National Marine Sanctuary the effective date of the regulations in subpart P, provided that the holder of such authorization or right complies with certification procedures and criteria promulgated at the time of Sanctuary designation, or in the case of the Florida Keys National Marine Sanctuary the effective date of the regulations in subpart P, and with any terms and conditions on the exercise of such authorization or right imposed by the Director as a condition of certification as the Director deems necessary to achieve the purposes for which the Sanctuary was designated.

**§922.48 National Marine Sanctuary permits-application procedures and issuance criteria.**

(95) (a) A person may conduct an activity prohibited by subparts F through O, if conducted in accordance with the scope, purpose, terms and conditions of a permit issued under this section and subparts F through O, as appropriate. For the Florida Keys National Marine Sanctuary, a person may conduct an activity prohibited by subpart P if conducted in accordance with the scope, purpose, terms and conditions of a permit issued under §922.166. For the Thunder Bay National Marine Sanctuary and Underwater Preserve, a person may conduct an activity prohibited by Subpart R in accordance with the scope, purpose, terms and conditions of a permit issued §922.195.

(96) (b) Applications for permits to conduct activities otherwise prohibited by subparts F through O should be addressed to the Director and sent to the address specified in subparts F through O, or subpart R, as appropriate. An application must include:

(97) (1) A detailed description of the proposed activity including a timetable for completion:

(98) (2) The equipment, personnel and methodology to be employed;

(99) (3) The qualifications and experience of all personnel;

(100) (4) The potential effects of the activity, if any, on Sanctuary resources and qualities; and

(101) (5) Copies of all other required licenses, permits, approvals or other authorizations.

(102) (c) Upon receipt of an application, the Director may request such additional information from the applicant as he or she deems necessary to act on the application and may seek the views of any persons or entity, within or outside the Federal government, and may hold a public hearing, as deemed appropriate.

(103) (d) The Director, at his or her discretion, may issue a permit, subject to such terms and conditions as he or she deems appropriate, to conduct a prohibited activity, in accordance with the criteria found in subparts F through O, or subpart R, as appropriate. The Director shall further impose, at minimum, the conditions set forth in the relevant subpart.

(104) (e) A permit granted pursuant to this section is nontransferable.

(105) (f) The Director may amend, suspend, or revoke a permit issued pursuant to this section for good cause. The Director may deny a permit application pursuant to this section, in whole or in part, if it is determined that the permittee or applicant has acted in violation of the terms and conditions of a permit or of the regulations set forth in this section or subparts F through O, subpart R or for other good cause. Any such action shall be communicated in writing to the permittee or applicant by certified mail and shall set forth the reason(s) for the action taken. Procedures governing permit sanctions and denials for enforcement reasons are set forth in subpart D of 15 CFR part 904.

**§922.49 Notification and review of applications for leases, licenses, permits, approvals, or other authorizations to conduct a prohibited activity.**

(106) (a) A person may conduct an activity prohibited by subparts L through P, or subpart R, if such activity is specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization issued after the effective date of Sanctuary designation, or in the case of the Florida Keys National Marine Sanctuary after the effective date of the regulations in subpart P, provided that:

(107) (1) The applicant notifies the Director, in writing, of the application for such authorization (and of any application for an amendment, renewal, or extension of such authorization) within fifteen (15) days of the date of filing of the application or the effective date of Sanctuary designation, or in the case of the Florida Keys National Marine Sanctuary the effective date of the regulations in subpart P, whichever is later;

(108) (2) The applicant complies with the other provisions of this §922.49;

(109) (3) The Director notifies the applicant and authorizing agency that he or she does not object to issuance of the authorization (or amendment, renewal, or extension); and

(110) (4) The applicant complies with any terms and conditions the Director deems reasonably necessary to protect Sanctuary resources and qualities.

(111) (b) Any potential applicant for an authorization described in paragraph (a) of this section may request the Director to issue a finding as to whether the activity for which an application is intended to be made is prohibited by subpart L through P, or subpart R, as appropriate.

(112) (c) Notification of filings of applications should be sent to the Director, Office of Ocean and Coastal Resource Management at the address specified in subparts L through P, or subpart R, as appropriate. A copy of the application must accompany the notification.

(113) (d) The Director may request additional information from the applicant as he or she deems reasonably necessary to determine whether to object to issuance of an authorization described in paragraph (a) of this section, or what terms and conditions are reasonably necessary to protect Sanctuary resources and qualities. The information requested must be received by the Director within 45 days of the postmark date of the request. The Director may seek the views of any persons on the application.

(114) (e) The Director shall notify, in writing, the agency to which application has been made of his or her pending review of the application and possible objection to issuance. Upon completion of review of the application and information received with respect thereto, the Director shall notify both the agency and applicant, in writing, whether he or she has an objection to issuance and what terms and conditions he or she deems reasonably necessary to protect Sanctuary resources and qualities, and reasons therefor.

(115) (f) The Director may amend the terms and conditions deemed reasonably necessary to protect Sanctuary resources and qualities whenever additional information becomes available justifying such an amendment.

(116) (g) Any time limit prescribed in or established under this §922.49 may be extended by the Director for good cause.

(117) (h) The applicant may appeal any objection by, or terms or conditions imposed by, the Director to the Assistant Administrator or designee in accordance with the provisions of §922.50.

**§922.50 Appeals of administrative action.**

(118) (a)(1) Except for permit actions taken for enforcement reasons (see subpart D of 15 CFR part 904 for applicable procedures), an applicant for, or a holder of, a National Marine Sanctuary permit; an applicant for, or a holder of, a Special Use permit pursuant to section 310 of the Act; a person requesting certification of an existing lease, permit, license or right of subsistence use or access under §922.47; or, for those Sanctuaries described in subparts L through P and subpart R, an applicant for a lease, permit, license or other authorization issued by any Federal, State, or local authority of competent jurisdiction (hereinafter appellant) may appeal to the Assistant Administrator:

(119) (i) The granting, denial, conditioning, amendment, suspension or revocation by the Director of a National Marine Sanctuary or Special Use permit;

(120) (ii) The conditioning, amendment, suspension or revocation of a certification under §922.47; or

(121) (iii) For those Sanctuaries described in subparts L through P and subpart R, the objection to issuance of or the imposition of terms and conditions on a lease, permit, license or other authorization issued by any Federal, State, or local authority of competent jurisdiction.

(122) (2) For those National Marine Sanctuaries described in subparts F through K, any interested person may also appeal the same actions described in §922.50(a)(1)(i) and (ii). For appeals arising from actions taken with respect to these National Marine Sanctuaries, the term "appellant" includes any such interested persons.

(123) (b) An appeal under paragraph (a) of this section must be in writing, state the action(s) by the Director appealed and the reason(s) for the appeal, and be received within 30 days of receipt of notice of the action by the Director. Appeals should be addressed to the Assistant Administrator for Ocean Services and Coastal Zone Management, NOAA 1305 East-West Highway, 13th Floor, Silver Spring, MD 20910.

(124) (c)(1) The Assistant Administrator may request the appellant to submit such information as the Assistant Administrator deems necessary in order for him or her to decide the appeal. The information requested must be received by the Assistant Administrator within 45 days of the postmark date of the request. The Assistant Administrator may seek the views of any other persons. For the Monitor National Marine Sanctuary, if the appellant has requested a hearing, the Assistant Administrator shall grant an informal hearing. For all other National Marine Sanctuaries, the Assistant Administrator may determine whether to hold an informal hearing on the appeal. If the Assistant Administrator determines that an informal hearing should be held, the Assistant Administrator may designate an officer before whom the hearing shall be held.

(125) (2) The hearing officer shall give notice in the **Federal Register** of the time, place and subject matter of the hearing. The appellant and the Director may appear

personally or by counsel at that hearing and submit such material and present such arguments as deemed appropriate by the hearing officer. Within 60 days after the record for the hearing closes, the hearing officer shall recommend a decision in writing to the Assistant Administrator.

(126) (d) The Assistant Administrator shall decide the appeal using the same regulatory criteria as for the initial decision and shall base the appeal decision on the record before the Director and any information submitted regarding the appeal, and, if a hearing has been held, on the record before the hearing officer and the hearing officer's recommended decision. The Assistant Administrator shall notify the appellant of the final decision and the reason(s) therefore in writing. The Assistant Administrator's decision shall constitute final agency action for the purpose of the Administrative Procedure Act.

(127) (e) Any time limit prescribed in or established under this section other than the 30-day limit for filing an appeal may be extended by the Assistant Administrator or hearing office for good cause.

## Subpart F–Monitor National Marine Sanctuary

### §922.60 Boundary.

(128) The Monitor National Marine Sanctuary (Sanctuary) consists of a vertical water column in the Atlantic Ocean one mile in diameter extending from the surface to the seabed, the center of which is at 35°00'23"N. and 75°24'32"W.

### §922.61 Prohibited or otherwise regulated activities.

(129) Except as may be permitted by the Director, the following activities are prohibited and thus are unlawful for any person to conduct or to cause to be conducted within the Sanctuary:

(130) (a) Anchoring in any manner, stopping, remaining, or drifting without power at any time;

(131) (b) Any type of subsurface salvage or recovery operation;

(132) (c) Diving of any type, whether by an individual or by a submersible;

(133) (d) Lowering below the surface of the water any grappling, suction, conveyor, dredging or wrecking device;

(134) (e) Detonating below the surface of the water any explosive or explosive mechanism;

(135) (f) Drilling or coring the seabed;

(136) (g) Lowering, laying, positioning or raising any type of seabed cable or cable-laying device;

(137) (h) Trawling; or

(138) (i) Discharging waster material into the water in violation of any Federal statute or regulation.

### §922.62 Permit procedure and criteria.

(139) (a) Any person or entity may conduct in the Sanctuary any activity listed in §922.61 if such activity is either: (1) For the purpose of research related to the Monitor, or (2) Pertains to salvage or recovery operations in connection with an air or marine casualty and such person or entity is in possession of a valid permit issued by the Director authorizing the conduct of such activity; except that, no permit is required for the conduct of any activity immediately and urgently necessary for the protection of life, property or the environment.

(140) (b) Any person or entity who wishes to conduct in the Sanctuary an activity for which a permit is authorized by this section (hereafter a permitted activity) may apply in writing to the Director for a permit to conduct such activity citing this section as the basis for the application. Such application should be made to: Director, Office of Ocean and Coastal Resource Management; ATTN: Manager, Monitor National Marine Sanctuary, Building 1519, NOAA, Fort Eustis, VA 23604-5544.

(141) (c) In considering whether to grant a permit for the conduct of a permitted activity for the purpose of research related to the Monitor, the Secretary shall evaluate such matters as:

(142) (1) The general professional and financial responsibility of the applicant;

(143) (2) The appropriateness of the research method(s) envisioned to the purpose(s) of the research;

(144) (3) The extent to which the conduct of any permitted activity may diminish the value of the MONITOR as a source of historic, cultural, aesthetic and/or maritime information;

(145) (4) The end value of the research envisioned; and

(146) (5) Such other matters as the Director deems appropriate.

(147) (d) In considering whether to grant a permit for the conduct of a permitted activity in the Sanctuary in relation to an air or marine casualty, the Director shall consider such matters as:

(148) (1) The fitness of the applicant to do the work envisioned;

(149) (2) The necessity of conducting such activity;

(150) (3) The appropriateness of any activity envisioned to the purpose of the entry into the Sanctuary;

(151) (4) The extent to which the conduct of any such activity may diminish the value of the Monitor as a source of historic, cultural, aesthetic and/or maritime information; and

(152) (5) Such other matters as the Director deems appropriate.

(153) (e) In considering any application submitted pursuant to this section, the Director shall seek and consider the views of the Advisory Council on Historic Preservation.

(154) (f) The Director may observe any activity permitted by this section; and/or may require the submission of one or more reports of the status or progress of such activity.

## Subpart I-Gray's Reef National Marine Sanctuary

### §922.90 Boundary.

(155) The Gray's Reef National Marine Sanctuary (Sanctuary) consists of approximately 16.68 square nautical miles of ocean waters and the submerged lands thereunder, off the coast of Georgia. The Sanctuary boundary includes all waters and submerged lands within the geodetic lines connecting the following coordinates:

(156) Datum: NAD83

(157) Geographic Coordinate System

(158) (1) N 31.362732 degrees W 80.921200 degrees

(159) (2) N 31.421064 degrees W 80.921201 degrees

(160) (3) N 31.421064 degrees W 80.828145 degrees

(161) (4) N 31.362732 degrees W 80.828145 degrees

(162) (5) N 31.362732 degrees W 80.921200 degrees

### §922.91 Definitions.

(163) In addition to those definitions found at §922.3, the following definitions apply to this subpart:

(164) Handline means fishing gear that is set and pulled by hand and consists of one vertical line to which may be attached leader lines with hooks.

(165) Rod and reel means a rod and reel unit that is not attached to a vessel, or, if attached, is readily removable, from which a line and attached hook(s) are deployed. The line is payed out from and retrieved on the reel manually or electrically.

(166) Stowed and not available for immediate use means not readily accessible for immediate use, e.g., by being securely covered and lashed to a deck or bulkhead, tied down, unbaited, unloaded, partially disassembled, or stowed for transit.

### §922.92 Prohibited or otherwise regulated activities.

(167) (a) Except as may be necessary for national defense (subject to the terms and conditions of Article 5, Section 2 of the Designation Document) or to respond to an emergency threatening life, property, or the environment, or except as may be permitted by the Director in accordance with §922.48 and §922.93, the following activities are unlawful for any person to conduct or to cause to be conducted within the Sanctuary:

(168) (1) Dredging, drilling into, or otherwise altering in any way the submerged lands of the Sanctuary (including bottom formations).

(169) (2) Constructing any structure other than a navigation aid, or constructing, placing or abandoning any structure, material, or other matter on the submerged lands of the Sanctuary.

(170) (3) Discharging or depositing any material or other matter except:

(171) (i) Fish or fish parts, bait, or chumming materials;

(172) (ii) Effluent from marine sanitation devices; and

(173) (iii) Vessel cooling water.

(174) (4) Operating a watercraft other than in accordance with the Federal rules and regulations that would apply if there were no Sanctuary.

(175) (5)(i) Injuring, catching, harvesting, or collecting, or attempting to injure, catch, harvest, or collect, any marine organism, or any part thereof, living or dead, within the Sanctuary by any means except by use of rod and reel, and handline gear;

(176) (ii) There shall be a rebuttable presumption that any marine organism or part thereof referenced in this paragraph found in the possession of a person within the Sanctuary has been collected from the Sanctuary.

(177) (6) Using any fishing gear within the Sanctuary except rod and reel, and handline gear, or for law enforcement purposes.

(178) (7) Using underwater any explosives, or devices that produce electric charges underwater.

(179) (8) Breaking, cutting, damaging, taking, or removing any bottom formation.

(180) (9) Moving, removing, damaging, or possessing, or attempting to move, remove, damage, or possess, any Sanctuary historical resource.

(181) (10) Anchoring any vessel in the Sanctuary, except as provided in §922.92 when responding to an emergency threatening life, property, or the environment.

(182) (11) Possessing or carrying any fishing gear within the Sanctuary except:

(183) (i) Rod and reel, and handline gear;

(184) (ii) Fishing gear other than rod and reel, handline gear, and spearfishing gear, provided that it is stowed on a vessel and not available for immediate use;

(185) (iii) Spearfishing gear provided that it is stowed on a vessel, not available for immediate use, and the vessel is passing through the Sanctuary without interruption; and

(186) (iv) For law enforcement purposes.

(187) (b) All activities currently carried out by the Department of Defense within the Sanctuary are essential for the national defense and, therefore, not subject to the prohibitions in this section. The exemption of additional activities having significant impacts shall be determined in consultation between the Director and the Department of Defense.

### §922.93 Permit procedures and criteria.

(188) (a) A person may conduct an activity prohibited by §922.92(a)(1) through (10) if conducted in accordance within the scope, purpose, manner, terms and conditions of a permit issued under this section and §922.48.

(189) (b) Applications for such permits should be addressed to the Director, National Marine Sanctuary Program, ATTN: Manager, Gray's Reef National Marine Sanctuary, 10 Ocean Science Circle, Savannah, GA 31411.

(190) (c) The Director, at his or her discretion may issue a permit, subject to such terms and conditions as he or she deems appropriate, to conduct an activity

prohibited by §922.92(a)(1) through (10). The Director must also find that the activity will:

(191) (1) Further research related to the resources and qualities of the Sanctuary;

(192) (2) Further the educational, natural, or historical resource value of the Sanctuary;

(193) (3) Further salvage or recovery operations in connection with a recent air or marine casualty; or

(194) (4) Assist in managing the Sanctuary.

(195) (d) The Director shall not issue a permit unless the Director also finds that:

(196) (1) The applicant is professionally qualified to conduct and complete the proposed activity;

(197) (2) The applicant has adequate financial resources available to conduct and complete the proposed activity;

(198) (3) The duration of the proposed activity is no longer than necessary to achieve its state purpose;

(199) (4) The methods and procedures proposed by the applicant are appropriate to achieve the proposed activity's goals in relation to the activity's impacts on Sanctuary resources and qualities;

(200) (5) The proposed activity will be conducted in a manner compatible with Sanctuary resources and qualities, considering the extent to which the conduct of the activity may diminish or enhance Sanctuary resources and qualities, any indirect, secondary or cumulative effects of the activity, and the duration of such effects;

(201) (6) The proposed activity will be conducted in a manner compatible with the value of the Sanctuary as a source of recreation, or as a source of educational or scientific information considering the extent to which the conduct of the activity may result in conflicts between different users of the Sanctuary, and the duration of such effects;

(202) (7) It is necessary to conduct the proposed activity within the Sanctuary to achieve its purposes;

(203) (8) The reasonably expected end value of the activity to the furtherance of Sanctuary goals and purposes outweighs any potential adverse impacts on Sanctuary resources and qualities from the conduct of the activity; and

(204) (9) There are no other factors that make the issuance of a permit for the activity inappropriate.

(205) (e) It shall be a condition of any permit issued that the permit or a copy thereof be displayed on board all vessels or aircraft used in the conduct of the activity.

(206) (f) The Director shall, inter alia, make it a condition of any permit issued that any data or information obtained under the permit be made available to the public.

(207) (g) The Director may, inter alia, make it a condition of any permit issued to require the submission of one or more reports of the status and progress of such activity.

(208) (h) The Director may, inter alia, make it a condition of any permit issued that a NOAA official be allowed to observe any activity conducted under the permit and/or that the permit holder submit one or more reports on the status, progress or results of any activity authorized by the permit.

## Subpart P–Florida Keys National Marine Sanctuary

### §922.160 Purpose.

(209) (a) The purpose of the regulations in this subpart is to implement the comprehensive management plan for the Florida Keys National Marine Sanctuary by regulating activities affecting the resources of the Sanctuary or any of the qualities, values, or purposes for which the Sanctuary is designated, in order to protect, preserve and manage the conservation, ecological, recreational, research, educational, historical, and aesthetic resources and qualities of the area. In particular, the regulations in this part are intended to protect, restore, and enhance the living resources of the Sanctuary, to contribute to the maintenance of natural assemblages of living resources for future generations, to provide places for species dependent on such living resources to survive and propagate, to facilitate to the extent compatible with the primary objective of resource protection all public and private uses of the resources of the Sanctuary not prohibited pursuant to other authorities, to reduce conflicts between such compatible uses, and to achieve the other policies and purposes of the Florida Keys National Marine Sanctuary and Protection Act and the National Marine Sanctuaries Act.

(210) (b) Section 304(e) of the NMSA requires the Secretary to review management plans and regulations every five years, and make necessary revisions. Upon completion of the five year review of the Sanctuary management plan and regulations, the Secretary will repropose the regulations in their entirety with any proposed changes thereto, including those regulations in subparts A and E of this part that apply to the Sanctuary. The Governor of the State of Florida will have the opportunity to review the reproposed regulations before they take effect and if the Governor certifies such regulations as unacceptable, they will not take effect in State waters of the Sanctuary.

### §922.161 Boundary.

(211) The Sanctuary consists of an area of approximately 2900 square nautical miles (9,800 square kilometers) of coastal and ocean waters, and the submerged lands thereunder, surrounding the Florida Keys in Florida. Appendix I to this subpart sets forth the precise Sanctuary boundary.

### §922.162 Definitions.

(212) (a) The following definitions apply to the Florida Keys National Marine Sanctuary regulations. To the extent that a definition appears in §922.3 and this section, the definition in this section governs.

(213) Acts means the Florida Keys National Marine Sanctuary and Protection Act, as amended, (FKNMSPA) (Pub. L. 101-605), and the National Marine Sanctuaries

Act (NMSA), also known as Title III of the Marine Protection, Research, and Sanctuaries Act, as amended, (MPRSA) (16 U.S.C. 1431 et seq.).

(214) Adverse effect means any factor, force, or action that independently or cumulatively damages, diminishes, degrades, impairs, destroys, or otherwise harms any Sanctuary resource, as defined in section 302(8) of the NMSA (16 U.S.C. 1432(8)) and in this section, or any of the qualities, values, or purposes for which the Sanctuary is designated.

(215) Airboat means a vessel operated by means of a motor driven propeller that pushes air for momentum.

(216) Areas To Be Avoided means the areas in which vessel operations are prohibited pursuant to section 6(a)(1) of the FKNMSPA (see §922.164(a)). Appendix VII to this subpart sets forth the geographic coordinates of these areas, including any modifications thereto made in accordance with section 6(a)(3) of the FKNMSPA.

(217) Closed means all entry or use is prohibited.

(218) Coral means but is not limited to the corals of the Class Hydrozoa (stinging and hydrocorals); Class Anthozoa, Subclass Hexacorallia, Order Scleractinia (stony corals); Class Anthoza, Subclass Ceriantipatharia, Order Antipatharia (black corals); and Class Anthozoa, Subclass Octocorallia, Order Gorgonacea, Species Gorgonia ventalina and Gorgonia flabellum (sea fans).

(219) Coral area means marine habitat where coral growth abounds including patch reefs, outer bank reefs, deepwater banks, and hardbottoms.

(220) Coral reefs means the hard bottoms, deep-water banks, patch reefs, and outer bank reefs.

(221) Ecological Reserve means an area of the Sanctuary consisting of contiguous, diverse habitats, within which uses are subject to conditions, restrictions and prohibitions, including access restrictions, intended to minimize human influences, to provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life, and also to protect and preserve natural assemblages of habitats and species within areas representing a broad diversity of resources and habitats found within the Sanctuary. Appendix IV to this subpart sets forth the geographic coordinates of these areas.

(222) Existing Management Area means an area of the Sanctuary that is within or is a resource management area established by NOAA or by another Federal authority of competent jurisdiction as of the effective date of these regulations where protections above and beyond those provided by Sanctuary-wide prohibitions and restrictions are needed to adequately protect resources. Appendix II to this subpart sets forth the geographic coordinates of these areas.

(223) Exotic species means a species of plant, invertebrate, fish, amphibian, reptile or mammal whose natural zoogeographic range would not have included the waters of the Atlantic Ocean, Caribbean, or Gulf of Mexico without passive or active introduction to such area through anthropogenic means.

(224) Fish means finfish, mollusks, crustaceans, and all forms of marine animal and plant life other than marine mammals and birds.

(225) Fishing means: (1) The catching, taking, or harvesting of fish; the attempted catching, taking, or harvesting of fish; any other activity which can reasonably be expected to result in the catching, taking, or harvesting of fish; or any operation at sea in support of, or in preparation for, any activity described in this subparagraph (1).

(226) (2) Such term does not include any scientific research activity which is conducted by a scientific research vessel.

(227) Hardbottom means a submerged marine community comprised of organisms attached to exposed solid rock substrate. Hardbottom is the substrate to which corals may attach but does not include the corals themselves.

(228) Idle speed only/no-wake means a speed at which a boat is operated that is no greater than 4 knots or does not produce a wake.

(229) Idle speed only/no-wake zone means a portion of the Sanctuary where the speed at which a boat is operated may be no greater than 4 knots or may not produce a wake.

(230) Length overall (LOA) or length means, as used in §922.167 with respect to a vessel, the horizontal distance, rounded to the nearest foot (with 0.5 ft and above rounded upward), between the foremost part of the stem and the aftermost part of the stern, excluding bowsprits, rudders, outboard motor brackets, and similar fittings or attachments.

(231) Live rock means any living marine organism or an assemblage thereof attached to a hard substrate, including dead coral or rock but not individual mollusk shells (e.g., scallops, clams, oysters). Living marine organisms associated with hard bottoms, banks, reefs, and live rock may include, but are not limited to: sea anemones (Phylum Cnidaria: Class Anthozoa: Order Actinaria); sponges (Phylum Porifera); tube worms (Phylum Annelida), including fan worms, feather duster worms, and Christmas tree worms; bryozoans (Phylum Bryzoa); sea squirts (Phylum Chordata); and marine algae, including Mermaid's fan and cups (Udotea spp.), corraline algae, green feather, green grape algae (Caulerpa spp.) and watercress (Halimeda spp.).

(232) Marine life species means any species of fish, invertebrate, or plant included in sections (2), (3), or (4) of Rule 46 –42.001, Florida Administrative Code, reprinted in Appendix VIII to this subpart.

(233) Military activity means an activity conducted by the Department of Defense with or without participation by foreign forces, other than civil engineering and other civil works projects conducted by the U.S. Army Corps of Engineers.

(234) No-access buffer zone means a portion of the Sanctuary where vessels are prohibited from entering regardless of the method of propulsion.

(235) No motor zone means an area of the Sanctuary where the use of internal combustion motors is prohibited. A vessel with an internal combustion motor may access a no motor zone only through the use of a push pole, paddle, sail, electric motor or similar means of operation but is prohibited from using it's internal combustion motor.

(236) Not available for immediate use means not readily accessible for immediate use, e.g., by being stowed unbaited in a cabin, locker, rod holder, or similar storage area, or by being securely covered and lashed to a deck or bulkhead.

(237) Officially marked channel means a channel marked by Federal, State of Florida, or Monroe County officials of competent jurisdiction with navigational aids except for channels marked idle speed only/no wake.

(238) Personal watercraft means any jet air-powered watercraft operated by standing, sitting, or kneeling on or behind the vessel, in contrast to a conventional boat, where the operator stands or sits inside the vessel, and that uses an inboard engine to power a water jet pump for propulsion, instead of a propeller as in a conventional boat.

(239) Prop dredging means the use of a vessel's propulsion wash to dredge or otherwise alter the seabed of the Sanctuary. Prop dredging includes, but is not limited to, the use of propulsion wash deflectors or similar means of dredging or otherwise altering the seabed of the Sanctuary. Prop dredging does not include the disturbance to bottom sediments resulting from normal vessel propulsion.

(240) Prop scarring means the injury to seagrasses or other immobile organisms attached to the seabed of the Sanctuary caused by operation of a vessel in a manner that allows its propeller or other running gear, or any part thereof, to cause such injury (e.g., cutting seagrass rhizomes). Prop scarring does not include minor disturbances to bottom sediments or seagrass blades resulting from normal vessel propulsion.

(241) Residential shoreline means any man-made or natural:

(242) (1) Shoreline,

(243) (2) Canal mouth,

(244) (3) Basin, or

(245) (4) Cove adjacent to any residential land use district, including improved subdivision, suburban residential or suburban residential limited, sparsely settled, urban residential, and urban residential mobile home under the Monroe County land development regulations.

(246) Sanctuary means the Florida Keys National Marine Sanctuary.

(247) Sanctuary Preservation Area means an area of the Sanctuary that encompasses a discrete, biologically important area, within which uses are subject to conditions, restrictions and prohibitions, including access restrictions, to avoid concentrations of uses that could result in significant declines in species populations or habitat, to reduce conflicts between uses, to protect areas that are critical for sustaining important marine species or habitats, or to provide opportunities for scientific research. Appendix V to this subpart sets forth the geographic coordinates of these areas.

(248) Sanctuary wildlife means any species of fauna, including avifauna, that occupy or utilize the submerged resources of the Sanctuary as nursery areas, feeding grounds, nesting sites, shelter, or other habitat during any portion of their life cycles.

(249) Seagrass means any species of marine angiosperms (flowering plants) that inhabit portions of the seabed in the Sanctuary. Those species include, but are not limited to: Thalassia testudinum (turtle grass); Syringodium filiforme (manatee grass); Halodule wrightii (shoal grass); Halophila decipiens, H. engelmannii, H. johnsonii; and Ruppia maritima.

(250) Special-use Area means an area of the Sanctuary set aside for scientific research and educational purposes, recovery or restoration of Sanctuary resources, monitoring, to prevent use or user conflicts, to facilitate access and use, or to promote public use and understanding of Sanctuary resources. Appendix VI to this part sets forth the geographic coordinates of these areas.

(251) Stem means the foremost part of a vessel, consisting of a section of timber or fiberglass, or cast, forged, or rolled metal, to which the sides of the vessel are united at the fore end, with the lower end united to the keel, and with the bowsprit, if one is present, resting on the upper end.

(252) Stern means the aftermost part of the vessel.

(253) Tank vessel means any vessel that is constructed or adapted to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue, and that -

(254) (1) Is a United States flag vessel;

(255) (2) Operates on the navigable waters of the United States; or

(256) (3) Transfers oil or hazardous material in a port or place subject to the jurisdiction of the United States [46 U.S.C. 2101].

(257) Traditional fishing means those commercial or recreational fishing activities that were customarily conducted within the Sanctuary prior to its designation as identified in the Environmental Impact Statement and Management Plan for this Sanctuary.

(258) Tropical fish means any species included in section (2) of Rule 46–42.001, Florida Administrative Code, reproduced in Appendix VIII to this subpart, or any part thereof.

(259) Vessel means a watercraft of any description, including, but not limited to, motorized and non-motorized watercraft, personal watercraft, airboats, and float planes while maneuvering on the water, capable of being used as a means of transportation in/on the waters of the Sanctuary. For purposes of this part, the terms "vessel," "watercraft," and "boat" have the same meaning.

(260) Wildlife Management Area means an area of the Sanctuary established for the management, protection,

and preservation of Sanctuary wildlife resources, including such an area established for the protection and preservation of endangered or threatened species or their habitats, within which access is restricted to minimize disturbances to Sanctuary wildlife; to ensure protection and preservation consistent with the Sanctuary designation and other applicable law governing the protection and preservation of wildlife resources in the Sanctuary. Appendix III to this subpart lists these areas and their access restrictions.

(261) (b) Other terms appearing in the regulations in this part are defined at 15 CFR 922.3, and/or in the Marine Protection, Research, and Sanctuaries Act (MPRSA), as amended, 33 U.S.C. 1401 et seq. and 16 U.S.C., 1431 et seq.

**§922.163 Prohibited activities–Sanctuary-wide.**

(262) (a) Except as specified in paragraph (b) through (e) of this section, the following activities are prohibited and thus are unlawful for any person to conduct or to cause to be conducted:

(263) (1) Mineral and hydrocarbon exploration, development and production. Exploring for, developing, or producing minerals or hydrocarbons within the Sanctuary.

(264) (2) Removal of, injury to, or possession of coral or live rock. (i) Moving, removing, taking, harvesting, damaging, disturbing, touching, breaking, cutting, or otherwise injuring, or possessing (regardless of where taken from) any living or dead coral, or coral formation, or attempting any of those activities, except as permitted under 50 CFR part 622.

(265) (ii) Harvesting, or attempting to harvest, any live rock from the Sanctuary, or possessing (regardless of where taken from) any live rock within the Sanctuary, except as authorized by a permit for the possession or harvest from aquaculture operations in the Exclusive Economic Zone, issued by the National Marine Fisheries Service pursuant to applicable regulations under the appropriate Fishery Management Plan, or as authorized by the applicable State authority of competent jurisdiction within the Sanctuary for live rock cultured on State submerged lands leased from the State of Florida, pursuant to applicable State law. See §370.027, Florida Statutes and implementing regulations.

(266) (3) Alteration of or construction on, the seabed. Drilling into, dredging, or otherwise altering the seabed of the Sanctuary, or engaging in prop-dredging; or constructing, placing or abandoning any structure, material, or other matter on the seabed of the Sanctuary, except as an incidental result of:

(267) (i) Anchoring vessels in a manner not otherwise prohibited by this part (see §§922.163(a)(5)(ii) and 922.164(d)(1)(v));

(268) (ii) Traditional fishing activities not otherwise prohibited by this part;

(269) (iii) Installation and maintenance of navigational aids by, or pursuant to valid authorization by, any Federal, State, or local authority of competent jurisdiction;

(270) (iv) Harbor maintenance in areas necessarily associated with Federal water resource development projects in existence on July 1, 1997, including maintenance dredging of entrance channels and repair, replacement, or rehabilitation of breakwaters or jetties;

(271) (v) Construction, repair, replacement, or rehabilitation of docks, seawalls, breakwaters, piers, or marinas with less than ten slips authorized by any valid lease, permit, license, approval, or other authorization issued by any Federal, State, or local authority of competent jurisdiction.

(272) (4) Discharge or deposit of materials or other matter. (i) Discharging or depositing, from within the boundary of the Sanctuary, any material or other matter, except:

(273) (A) Fish, fish parts, chumming materials, or bait used produced incidental to and while conducting a traditional fishing activity in the Sanctuary;

(274) (B) Water generated by routine vessel operations (e.g., deck wash down and graywater as defined in section 312 of the FWPCA), excluding oily wastes from bilge pumping; or

(275) (C) Cooling water from vessels or engine exhaust;

(276) (ii) Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, except:

(277) (A) Those listed in paragraph (a)(4)(i)(A) through (a)(4)(i)(C) of this section;

(278) (B) Sewage incidental to vessel use and gnerated by a marine sanitation device approved in accordance with section 312 of the Federal Water Pollution Control Act (FWPCA) as amended, 33 U.S.C. 1322 et seg.;

(279) (C) Those authorized under Monroe County land use permits.

(280) (D) Those authorized under State permits.

(281) (5) Operation of Vessels. (i) Operating a vessel in such a manner as to strike or otherwise injure coral, seagrass, or any other immobile organism attached to the seabed, including, but not limited to, operating a vessel in such a manner as to cause prop-scarring.

(282) (ii) Having a vessel anchored on living coral other than hardbottom in water depths less than 50 feet when visibility is such that the seabed can be seen.

(283) (iii) Except in officially marked channels, operating a vessel at a speed greater than 4 knots or in a manner which creates a wake:

(284) (A) Within an area designated idle speed only/no wake;

(285) (B) Within 100 yards of navigational aids indicating emergent or shallow reefs (international diamond warning symbol);

(286) (C) Within 100 yards of the red and white "divers down" flag (or the blue and white "alpha" flag in Federal waters);

(287) (D) Within 100 yards of residential shorelines; or

(288) (E) Within 100 yards of stationary vessels.

(289) (iv) Operating a vessel in such a manner as to injure or take wading, roosting, or nesting birds or marine mammals.

(290) (v) Operating a vessel in a manner which endangers life, limb, marine resources, or property.

(291) (vi) Having a marine sanitation device that is not secured in a manner that prevents discharges or deposits of treated and untreated sewage. Acceptable methods include, but are not limited to, all methods that have been approved by the U.S. Coast Guard (at 33 CFR 159.7(b) and (c)).

(292) (6) Conduct of diving/snorkeling without flag. Diving or snorkeling without flying in a conspicuous manner the red and white "divers down" flag (or the blue and white "alpha" flag in Federal waters).

(293) (7) Release of exotic species. Introducing or releasing an exotic species of plant, invertebrate, fish, amphibian, or mammals into the Sanctuary.

(294) (8) Damage or removal of markers. Marking, defacing, or damaging in any way or displacing, removing, or tampering with any official signs, notices, or placards, whether temporary or permanent, or with any navigational aids, monuments, stakes, posts, mooring buoys, boundary buoys, trap buoys, or scientific equipment.

(295) (9) Movement of, removal of, injury to, or possession of Sanctuary historical resources. Moving, removing, injuring, or possessing, or attempting to move, remove, injure, or possess, a Sanctuary historical resource.

(296) (10) Take or possession of protected wildlife. Taking any marine mammal, sea turtle, or seabird in or above the Sanctuary, except as authorized by the Marine Mammal Protection Act, as amended, (MMPA), 16 U.S.C. 1361 et seq., the Endangered Species Act, as amended, (ESA), 16 U.S.C. 1531 et seq., and the Migratory Bird Treaty Act, as amended, (MBTA) 16 U.S.C. 703 et seq.

(297) (11) Possession or use of explosives or electrical charges. Possessing, or using explosives, except powerheads, or releasing electrical charges within the Sanctuary.

(298) (12) Harvest or possession of marine life species. Harvesting, possessing, or landing any marine life species, or part thereof, within the Sanctuary, except in accordance with rules 68B-42 of the Florida Administrative Code, and such rules shall apply mutatis mutandis (with necessary editorial changes) to all Federal and State waters within the Sanctuary.

(299) (13) Interference with law enforcement. Interfering with, obstructing, delaying or preventing an investigation, search, seizure, or disposition of seized property in connection with enforcement of the Acts or any regulation or permit issued under the Acts.

(300) (b) Notwithstanding the prohibitions in this section and in §922.164, and any access and use restrictions imposed pursuant thereto, a person may conduct an activity specifically authorized by, and conducted in accordance with the scope, purpose, terms, and conditions of, a National Marine Sanctuary permit issued pursuant to §922.166.

(301) (c) Notwithstanding the prohibitions in this section and in §922.164, and any access and use restrictions imposed pursuant thereto, a person may conduct an activity specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization issued after the effective date of these regulations, provided that the applicant complies with §922.49, the Director notifies the applicant and authorizing agency that he or she does not object to issuance of the authorization, and the applicant complies with any terms and conditions the Director deems reasonably necessary to protect Sanctuary resources and qualities. Amendments, renewals and extensions of authorizations in existence on the effective date of these regulations constitute authorizations issued after the effective date of these regulations.

(302) (d) Notwithstanding the prohibitions in this section and in §922.164, and any access and use restrictions imposed pursuant thereto, a person may conduct an activity specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization issued after the effective date of these regulations, provided that the applicant complies with §922.168, the Director notifies the applicant and authorizing agency that he or she does not object to issuance of the authorization, and the applicant complies with any terms and conditions the Director deems reasonably necessary to protect Sanctuary resources and qualities. Amendments, renewals and extensions of authorizations in existence on the effective date of these regulations constitute authorizations issued after the effective date of these regulations.

(303) (e) The following prohibitions do not apply to Federal, State and local officers while performing enforcement duties in their official capacities or responding to emergencies that threaten life, property, or the environment:

(304) (1) Those contained in paragraph (a)(4) of this section only as it pertains to discharges of sewage incidental to vessel use and generated by a marine sanitation device approved in accordance with section 312 of the Federal Water Pollution Control Act (FWPCA), as amended, 33 U.S.C. 1322 et seq.; and

(305) (2) Those contained in paragraph (a)(5) of this section.

(306) (f) The prohibitions contained in paragraph (a)(5) of this section do not apply to Federal, State and local officers while performing enforcement duties and/or responding to emergencies that threaten life, property, or the environment in their official capacity.

(307) (g) Notwithstanding paragraph (b) of this section and paragraph (a) of §922.168, in no event may the Director issue a permit under §922.166 authorizing, or otherwise approve, the exploration for, leasing, development, or production of minerals or hydrocarbons within the Sanctuary, the disposal of dredged material

within the Sanctuary other than in connection with beach renourishment or Sanctuary restoration projects, or the discharge of untreated or primary treated sewage (except by a certification, pursuant to §922.167, of a valid authorization in existence on the effective date of these regulations), and any purported authorizations issued by other authorities after the effective date of these regulations for any of these activities within the Sanctuary shall be invalid.

(308) (h) Any amendment to these regulations shall not take effect in Florida State waters until approved by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. Any fishery regulations in the Sanctuary shall not take effect in Florida State waters until established by the Florida Marine Fisheries Commission.

**§922.164 Additional activity regulations by Sanctuary area.**

(309) In addition to the prohibitions set forth in §922.163, which apply throughout the Sanctuary, the following regulations apply with respect to activities conducted within the Sanctuary areas described in this section and in Appendix (II) through (VII) to this subpart. Activities located within two or more overlapping Sanctuary areas are concurrently subject to the regulations applicable to each overlapping area.

(310) (a) Areas To Be Avoided. Operating a tank vessel or a vessel greater than 50 meters in registered length is prohibited in all areas to be avoided, except if such vessel is a public vessel and its operation is essential for national defense, law enforcement, or responses to emergencies that threaten life, property, or the environment. Appendix VII to this subpart sets forth the geographic coordinates of these areas.

(311) (b) Existing Management Areas.–(1) Key Largo and Looe Key Management Areas. The following activities are prohibited within the Key Largo and Looe Key Management Areas (also known as the Key Largo and Looe Key National Marine Sanctuaries) described in Appendix II to this subpart:

(312) (i) Removing, taking, damaging, harmfully disturbing, breaking, cutting, spearing or similarly injuring any coral or other marine invertebrate, or any plant, soil, rock, or other material, except commercial taking of spiny lobster and stone crab by trap and recreational taking of spiny lobster by hand or by hand gear which is consistent with these regulations and the applicable egulations implementing the applicable Fishery Management Plan.

(313) (ii) Taking any tropical fish.

(314) (iii) Fishing with wire fish traps, bottom trawls, dredges, fish sleds, or similar vessel-towed or anchored bottom fishing gear or nets.

(315) (iv) Fishing with, carrying or possessing, except while passing through without interruption or for law enforcement purposes: pole spears, air rifles, bows and arrows, slings, Hawaiian slings, rubber powdered arbaletes, pneumatic and spring-loaded guns or similar devices known as spearguns.

(316) (2) Great White Heron and Key West National Wildlife Refuge Management Areas. Operating a personal watercraft, operating an airboat, or water skiing except within Township 66 South, Range 29 East, Sections 5, 11, 12 and 14; Township 66 South, Range 28 East, Section 2; Township 67 South, Range 26 East, Sections 16 and 20, all Tallahassee Meridian, are prohibited within the marine portions of the Great White Heron and Key West National Wildlife Refuge Management Areas described in Appendix II to this subpart:

(317) (c) Wildlife Management Areas. (1) Marine portions of the Wildlife Management Areas listed in Appendix III to this subpart or portions thereof may be designated "idle speed only/no-wake", "no-motor" or "no-access buffer" zones or "closed." The Director, in cooperation with other Federal, State, or local resource management authorities, as appropriate, shall post signs conspicuously, using mounting posts, buoys, or other means according to location and purpose, at appropriate intervals and locations, clearly delineating an area as an "idle speed only/no wake", a "no- motor", or a "no-access buffer" zone or as "closed", and allowing instant, long-range recognition by boaters. Such signs shall display the official logo of the Sanctuary.

(318) (2) The following activities are prohibited within the marine portions of the Wildlife Management Areas listed in Appendix III to this subpart:

(319) (i) In those marine portions of any Wildlife Management Area designated an " idle speed only/no wake" zone in Appendix III to this subpart, operating a vessel at a speed greater that idle speed only/no wake.

(320) (ii) In those marine portions of any Wildlife Management Area designated a "no-motor" zone in Appendix III to this subpart, using internal combustion motors or engines for any purposes. A vessel with an internal combustion motor or engine may access a "no-motor" zone only through the use of a push pole, paddle, sail, electric motor or similar means of propulsion.

(321) (iii) In those marine portions of any Wildlife Management Area designated a "no-access buffer" zone in Appendix III of this subpart, entering the area by vessel.

(322) (iv) In those marine portions of any Wildlife Management Area designated as closed in Appendix III to this subpart, entering or using the area.

(323) (3) The Director shall coordinate with other Federal, State, or local resource management authorities, as appropriate, in the establishment and enforcement of access restrictions described in paragraph (c)(2) (i)–(iv) of this section in the marine portions of Wildlife Management Areas.

(324) (4) The Director may modify the number and location of access restrictions described in paragraph (c) (2) (i)–(iv) of this section within the marine portions of a Wildlife Management Area if the Director finds that such action is reasonably necessary to minimize disturbances to Sanctuary wildlife, or to ensure protection

and preservation of Sanctuary wildlife consistent with the purposes of the Sanctuary designation and other applicable law governing the protection and preservation of wildlife resources in the Sanctuary. The Director will effect such modification by:

(325) (i) Publishing in the **Federal Register**, after notice and an opportunity for public comments in accordance, an amendment to the list of such areas set forth in Appendix III to this subpart, and a notice regarding the time and place where maps depicting the precise locations of such restrictions will be made available for public inspection, and

(326) (ii) Posting official signs delineating such restrictions in accordance with paragraph (c)(1) of this section.

(327) (d) Ecological Reserves, Sanctuary Preservation Areas, and Special Use (Research only) Areas. (1) The following activies are prohibited within the Ecological Reserves described in Appendix IV to this subpart, within the Sanctuary Preservation Areas described in Appendix V to this subpart, and within the Special Use (Research only Areas) described in Appendix V to this subpart, and within the Special Use (Research only Areas) described in Appendix VI to this subpart:

(328) (i) Discharging or depositing any material or other matter except cooling water or engine exhaust.

(329) (ii) Possessing, moving, harvesting, removing, taking, damaging, disturbing, breaking, cutting, spearing, or otherwise injuring any coral, marine invertebrate, fish, bottom formation, algae, seagrass or other living or dead organism, including shells, or attempting any of these activities. However, fish, invertebrates, and marine plants may be possessed aboard a vessel in an Ecological Reserve or Sanctuary Preservation Area, provided such resources can be shown not to have been harvested within, removed from, or taken within, the Ecological Reserve or Sanctuary Preservation Area, as applicable, by being stowed in a cabin, locker, or similar storage area prior to entering and during transit through such reserves or areas.

(330) (iii) Except for catch and release fishing by trolling in the Conch Reef, Alligator Reef, Sombrero Reef, and Sand Key SPAs, fishing by any means. However, gear capable of harvesting fish may be aboard a vessel in an Ecological Reserve or Sanctuary Preservation Area, provided such gear is not available for immediate use when entering and during transit through such Ecological Reserve or Sanctuary Preservation Area, and no presumption of fishing activity shall be drawn therefrom.

(331) (iv) Touching living or dead coral, including but not limited to, standing on a living or dead coral formation.

(332) (v) Anchoring in the Tortugas Ecological Reserve. In all other Ecological Reserves and Sanctuary Preservation Areas, placing any anchor in a way that allows the anchor or any portion of the anchor apparatus (including the anchor, chain or rope) to touch living or dead coral, or any attached living organism. When anchoring dive boats, the first diver down must inspect the anchor to ensure that it is not touching living or dead coral, and will not shift in such a way as to touch such coral or other attached organism. No further diving shall take place until the anchor is placed in accordance with these requirements.

(333) (vi) Except in the Tortugas Ecological Reserve where mooring buoys must be used, anchoring instead of mooring when a mooring buoy is available or anchoring in other than a designated anchoring area when such areas have been designated and are available.

(334) (vii) Except for passage without interruption though that area, for law enforcement purposes, or for purposes of monitoring pursuant to paragraph (d)(2) of this section, violating a temporary access restriction imposed by the Director pursuant to paragraph (d)(2) of this section.

(335) (viii) Except for passage without interruption through the area, for law enforcement purposes, or for purposes of monitoring pursuant to paragraph (d)(2) of this section: entering the Tortugas South area of the Tortugas Ecological Reserve; or entering the Tortugas North area of the Tortugas Ecological Reserve without a valid access permit issued pursuant to §922.167 or entering or leaving the Tortugas North area with a valid access permit issued pursuant to §922.167 without notifying FKNMS staff at the Dry Tortugas National Park office by telephone or radio no less than 30 minutes and no more than 6 hours, before entering and upon leaving the Tortugas Ecological Reserve.

(336) (ix) Tying a vessel greater than 100 feet (30.48 meters) LOA, or tying more than one vessel (other than vessels carried on board a vessel) if combined lengths would exceed 100 feet (30.48 meters) LOA, to a mooring buoy or to a vessel tied to a mooring buoy in the Tortugas Ecological Reserve.

(337) (2) The Director may temporarily restrict access to any portion of any Sanctuary Preservation Area or Ecological Reserve if the Director, on the basis of the best available data, information and studies, determines that a concentration of use appears to be causing or contributing to significant degradation of the living resources of the area and that such action is reasonably necessary to allow for recovery of the living resources of such area. The Director will provide for continuous monitoring of the area during the pendency of the restriction. The Director will provide public notice of the restriction by publishing a notice in the **Federal Register**, and by such other means as the Director may deem appropriate. The Director may only restrict access to an area for a period of 60 days, with one additional 60 day renewal. The Director may restrict access to an area for a longer period pursuant to a notice and opportunity for public comment rulemaking under the Administrative Procedure Act. Such restriction will be kept to the minimum amount of area necessary to achieve the purpose thereof.

(338) (e) Special-use Areas. (1) The Director may set aside discrete areas of the Sanctuary as Special-use Areas, and, by designation pursuant to this paragraph, impose the access and use restrictions specified in paragraph (e)(3) of this section. Special-use Areas are described in Appendix VI to this subpart, in accordance with the following designations and corresponding objectives:

(339) (i) "Recovery area" to provide for the recovery of Sanctuary resources from degradation or other injury attributable to human uses;

(340) (ii) "Restoration area" to provide for restoration of degraded or otherwise injured Sanctuary resources;

(341) (iii) "Research-only area" to provide for scientific research or education relating to protection and management through the issuance of a Sanctuary General permit for research pursuant to §922.166; and

(342) (iv) "Facilitated-use area" to provide for the prevention of use or user conflicts or the facilitation of access and use, or to promote public use and understanding, of Sanctuary resources through the issuance of special-use permits.

(343) (2) A Special-use Area shall be no larger than the size the Director deems reasonably necessary to accomplish the applicable objective.

(344) (3) Persons conducting activities within any Special-use Area shall comply with the access and use restrictions specified in this paragraph and made applicable to such area by means of its designations as a "recovery area," "restoration area," "research-only area," or "facilitated-use area." Except for passage without interruption through the area or for law enforcement purposes, no person may enter a Special-use Area except to conduct or cause to be conducted the following activities:

(345) (i) In such area designated as a "recovery area" or a "restoration area," habitat manipulation related to restoration of degraded or otherwise injured Sanctuary resources, or activities reasonably necessary to monitor recovery of degraded or otherwise injured Sanctuary resources;

(346) (ii) In such area designated as a "research only area," scientific research or educational use specifically authorized by and conducted in accordance with the scope, purpose, terms and conditions of a valid National Marine Sanctuary General or Historical Resources permit, or

(347) (iii) In such area designated as a "facilitated-use area," activities specified by the Director or specifically authorized by and conducted in accordance with the scope, purpose, terms, and conditions of a valid Special-use permit.

(348) (4)(i) The Director may modify the number of, location of, or designations applicable to, Special-use Areas by publishing in the **Federal Register**, after notice and an opportunity for public comment in accordance with the Administration Procedure Act, an amendment to Appendix VI to this subpart, except that, with respect to such areas designated as a "recovery area," "restoration area," or "research only area," the Director may modify the number of, location of, or designation applicable to, such areas by publishing a notice of such action in the **Federal Register** if the Director determines that immediate action is reasonably necessary to:

(349) (A) Prevent significant injury to Sanctuary resources where circumstances create an imminent risk to such resources;

(350) (B) Initiate restoration activity where a delay in time would significantly impair the ability of such restoration activity to succeed;

(351) (C) Initiate research activity where an unforeseen natural event produces an opportunity for scientific research that may be lost if research is not initiated immediately.

(352) (ii) If the Director determines that a notice of modification must be promulgated immediately in accordance with paragraph (e)(4)(i) of this section, the Director will, as part of the same notice, invite public comment and specify that comments will be received for 15 days after the effective date of the notice. As soon as practicable after the end of the comment period, the Director will either rescind, modify or allow the modification to remain unchanged through notice in the **Federal Register**.

(353) (5) In addition to paragraph (e)(3) of this section no person shall conduct activities listed in paragraph (d) of this section in "Research-only Areas."

(354) (f) Additional Wildlife Management Areas, Ecological Reserves, Sanctuary Preservation Areas, or Special-use Areas, and additional restrictions in such areas, shall not take effect in Florida State waters unless first approved by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida.

(355) (g) Anchoring on Tortugas Bank. Vessels 50 meters or greater in registered length, are prohibited from anchoring on the portion of Tortugas Bank within the Florida Keys National Marine Sanctuary west of the Dry Tortugas National Park that is outside of the Tortugas Ecological Reserve. The boundary of the area closed to anchoring by vessels 50 meters or greater in registered length is formed by connecting in succession the points at the following coordinates (based on the North American Datum of 1983):

(356) (1) 24°32.00'N., 83°00.05'W.

(357) (2) 24°37.00'N., 83°06.00'W.

(358) (3) 24°39.00'N., 83°06.00'W.

(359) (4) 24°39.00'N., 83°00.05'W.

(360) (5) 24°32.00'N., 83°00.05'W

**§922.165 Emergency regulations.**

(361) Where necessary to prevent or minimize the destruction of, loss of, or injury to a Sanctuary resource or quality, or minimize the imminent risk of such destruction, loss, or injury, any and all activities are subject to immediate temporary regulation, including prohibition. Emergency regulations shall not take effect in Florida territorial waters until approved by the

Governor of the State of Florida. Any temporary regulation may be in effect for up to 60 days, with one 60-day extension. Additional or extended action will require notice and comment rulemaking under the Administrative Procedure Act, notice in local newspapers, notice to Mariners, and press releases.

**§922.166 Permits other than for access to the Tortugas Ecological Reserve–application procedures and issuance criteria.**

(362) (a) National Marine Sanctuary General Permit.

(363) (1) A person may conduct an activity prohibited by §§922.163 or 922.164, other than an activity involving the survey/inventory, research/recovery, or deaccession/transfer of Sanctuary historical resources, if such activity is specifically authorized by, and provided such activity is conducted in accordance with the scope, purpose, terms and conditions of, a National Marine Sanctuary General permit issued under this paragraph (a).

(364) (2) The Director, at his or her discretion, may issue a General permit under this paragraph (a), subject to such terms and conditions as he or she deems appropriate, if the Director finds that the activity will:

(365) (i) Further research or monitoring related to Sanctuary resources and qualities;

(366) (ii) Further the educational value of the Sanctuary;

(367) (iii) Further the natural or historical resource value of the Sanctuary;

(368) (iv) Further salvage or recovery operations in or near the Sanctuary in connection with a recent air or marine casualty;

(369) (v) Assist in managing the Sanctuary; or

(370) (vi) Otherwise further Sanctuary purposes, including facilitating multiple use of the Sanctuary, to the extent compatible with the primary objective of resource protection.

(371) (3) The Director shall not issue a General permit under this paragraph (a), unless the Director also finds that:

(372) (i) The applicant is professionally qualified to conduct and complete the proposed activity;

(373) (ii) The applicant has adequate financial resources available to conduct and complete the proposed activity;

(374) (iii) The duration of the proposed activity is no longer than necessary to achieve its stated purpose;

(375) (iv) The methods and procedures proposed by the applicant are appropriate to achieve the proposed activity's goals in relation to the activity's impacts on Sanctuary resources and qualities;

(376) (v) The proposed activity will be conducted in a manner compatible with the primary objective of protection of Sanctuary resources and qualities, considering the extent to which the conduct of the activity may diminish or enhance Sanctuary resources and qualities, any indirect, secondary or cumulative effects of the activity, and the duration of such effects;

(377) (vi) It is necessary to conduct the proposed activity within the Sanctuary to achieve its purposes; and

(378) (vii) The reasonably expected and value of the activity to the furtherance of Sanctuary goals and purposes outweighs any potential adverse impacts on Sanctuary resources and qualities from the conduct of the activity.

(379) (4) For activities proposed to be conducted within any of the areas described in §922.164(b)–(e), the Director shall not issue a permit unless he or she further finds that such activities will further and are consistent with the purposes for which such area was established, as described in §§922.162 and 922.164 and in the management plan for the Sanctuary.

(380) (b) National Marine Sanctuary Survey/Inventory of Historical Resources Permit.

(381) (1) A person may conduct an activity prohibited by §§922.163 or 922.164 involving the survey/inventory of Sanctuary historical resources if such activity is specifically authorized by, and is conducted in accordance with the scope, purpose, terms and conditions of, a Survey/Inventory of Historical Resources permit issued under this paragraph (b). Such permit is not required if such survey/inventory activity does not involve any activity prohibited by §§922.163 or 922.164. Thus, survey/inventory activities that are non-intrusive, do not include any excavation, removal, or recovery of historical resources, and do not result in destruction of, loss of, or injury to Sanctuary resources or qualities do not require a permit. However, if a survey/inventory activity will involve test excavations or removal of artifacts or materials for evaluative purposes, a Survey/Inventory of Historical Resources permit is required. Regardless of whether a Survey/Inventory permit is required, a person may request such permit. Persons who have demonstrated their professional abilities under a Survey/Inventory permit will be given preference over other persons in consideration of the issuance of a Research/Recovery permit. While a Survey/Inventory permit does not grant any rights with regards to areas subject to pre-existing rights of access which are still valid, once a permit is issued for an area, other survey/inventory permits will not be issued for the same area during the period for which the permit is valid.

(382) (2) The Director, at his or her direction, may issue a Survey/Inventory permit under this paragraph (b), subject to such terms and conditions as he or she deems appropriate, if the Director finds that such activity:

(383) (i) Satisfies the requirements for a permit issued under paragraph (a)(3) of this section;

(384) (ii) Either will be non-intrusive, not include any excavation, removal, or recovery of historical resources, and not result in destruction of, loss of, or injury to Sanctuary resources or qualities, or if intrusive, will involve no more than the minimum manual alteration of the seabed and/or the removal of artifacts or other material necessary for evaluative purposes and will cause no significant adverse impacts on Sanctuary resources or qualities; and

(385) (iii) That such activity will be conducted in accordance with all requirements of the Programmatic

Agreement for the Management of Submerged Cultural Resources in the Florida Keys National Marine Sanctuary among NOAA, the Advisory Council on Historic Preservation, and the State of Florida (hereinafter SCR Agreement), and that such permit issuance is in accordance with such SCR Agreement.

(386) Copies of the SCR Agreement may also be examined at, and obtained from, the Sanctuaries and Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration, 1305 East-West Highway, 12th floor, Silver Spring, MD 20910; or from the Florida Keys National Marine Sanctuary Office, P.O. Box 500368, Marathon, FL 33050.

(387) (c) National Marine Sanctuary Research/Recovery of Sanctuary Historical Resources Permit.

(388) (1) A person may conduct any activity prohibited by §§922.163 or 922.164 involving the research/recovery of Sanctuary historical resources if such activity is specifically authorized by, and is conducted in accordance with the scope, purpose, terms and conditions of, a Research/Recovery of Historical Resources permit issued under this paragraph (c).

(389) (2) The Director, at his or her discretion, may issue a Research/Recovery of Historical Resources permit, under this paragraph (c), and subject to such terms and conditions as he or she deems appropriate, if the Director finds that:

(390) (i) Such activity satisfies the requirements for a permit issued under paragraph (a)(3) of this section;

(391) (ii) The recovery of the resource is in the public interest as described in the SCR Agreement;

(392) (iii) Recovery of the resource is part of research to preserve historic information for public use; and

(393) (iv) Recovery of the resource is necessary or appropriate to protect the resource, preserve historical information, and/or further the policies and purposes of the NMSA and the FKNMSPAK, and that such permit issuance is an accordance with, and that the activity will be conducted in accordance with, all requirements of the SCR Agreement.

(394) (d) National Marine Sanctuary Special-use Permit.

(395) (1) A person may conduct any commercial or concession-type activity prohibited by §§922.163 or 922.164, if such activity is specifically authorized by, and is conducted in accordance with the scope, purpose, terms and conditions of, a Special-use permit issued under this paragraph (d). A Special-use permit is required for the deaccession/transfer of Sanctuary historical resources.

(396) (2) The Director, at his or her discretion, may issue a Special-use permit in accordance with this paragraph (d), and subject to such terms and conditions as he or she deems appropriate and the mandatory terms and conditions of section 310 of the NMSA, if the Director finds that issuance of such permit is reasonably necessary to: establish conditions of access to and use of any Sanctuary resource; or promote public use and understanding of any Sanctuary resources. No permit may be issued unless the activity is compatible with the purposes for which the Sanctuary was designated and can be conducted in a manner that does not destroy, cause the loss of, or injure any Sanctuary resource, and if for the deaccession/transfer of Sanctuary Historical Resources, unless such permit issuance is in accordance with, and that the activity will be conducted in accordance with, all requirements of the SCR Agreement.

(397) (3) The Director may assess and collect fees for the conduct of any activity authorized by a Special-use permit issued pursuant to this paragraph (d). No Special-use permit shall be effective until all assessed fees are paid, unless otherwise provided by the Director by a fee schedule set forth as a permit condition. In assessing fee, the Director shall include:

(398) (i) all costs incurred, or expected to be incurred, in reviewing and processing the permit application, including, but not limited to, costs for:

(399) (A) Number of personnel;

(400) (B) Personnel hours;

(401) (C) Equipment;

(402) (D) Biological assessments;

(403) (E) Copying; and

(404) (F) Overhead directly related to reviewing and processing the permit application;

(405) (ii) all costs incurred, or expected to be incurred, as a direct result of the conduct of the activity for which the Special-use permit is being issued, including, but not limited to:

(406) (A) The cost of monitoring the conduct both during the activity and after the activity is completed in order to assess the impacts to Sanctuary resources and qualities;

(407) (B) The use of an official NOAA observer, including travel and expenses and personnel hours; and

(408) (C) Overhead costs directly related to the permitted activity; and

(409) (iii) an amount which represents the fair market value of the use of the Sanctuary resource and a reasonable return to the United States Government.

(410) (4) Nothing in this paragraph (d) shall be considered to require a person to obtain a permit under this paragraph for the conduct of any fishing activities within the Sanctuary.

(411) (e) Applications. (1) Application for permits should be addressed to the Director, Office of Ocean and Coastal Resource Management; ATTN: Sanctuary Superintendent, Florida Keys National Marine Sanctuary, PO Box 500368, Marathon, FL 33050. All applications must include:

(412) (i) A detailed description of the proposed activity including a timetable for completion of the activity and the equipment, personnel and methodology to be employed;

(413) (ii) The qualifications and experience of all personnel;

(414) (iii) The financial resources available to the applicant to conduct and complete the proposed activity;

(415) (iv) A statement as to why it is necessary to conduct the activity within the Sanctuary;

(416) (v) The potential impacts of the activity, if any, on Sanctuary resources and qualities;

(417) (vi) The benefit to be derived from the activity; and

(418) (vii) Such other information as the Director may request depending on the type of activity.

(419) Copies of all other required licenses, permits, approvals, or other authorizations must be attached to the application.

(420) (2) Upon receipt of an application, the Director may request such additional information from the applicant as he or she deems reasonably necessary to act on the application and may seek the views of any persons. The Director may require a site visit as part of the permit evaluation. Unless otherwise specified the information requested must be received by the Director within 30 days of the postmark date of the request. Failure to provide such additional information on a timely basis may be deemed by the Director to constitute abandonment or withdrawal of the permit application.

(421) (f) A permit may be issued for a period not exceeding five years. All permits will be reviewed annually to determine to the permittee's compliance with permit scope, purpose, terms and conditions and progress toward reaching the stated goals and appropriate action taken under paragraph (g) of this section if warranted. A permittee may request permit renewal pursuant to the same procedures for applying for a new permit. Upon the permittee's request for renewal, the Director shall review all reports submitted by the permittee as required by the permit conditions. In order to renew the permit, the Director must find that the:

(422) (1) Activity will continue to further the purposes for which the Sanctuary was designated in accordance with the criteria applicable to the initial issuance of the permit;

(423) (2) Permittee has at no time violated the permit, or these regulations; and

(424) (3) The activity has not resulted in any unforeseen adverse impacts to Sanctuary resources or qualities.

(425) (g) The Director may amend, suspend, or revoke a permit for good cause. The Director may deny a permit application, in whole or in part, if it is determined that the permittee or applicant has acted in violation of a previous permit, of these regulations, of the NMSA or FKNMSPA, or for other good cause. Any such action shall be communicated in writing to the permittee or applicant by certified mail and shall set forth the reason(s) for the action taken. Procedures governing permit sanctions and denials for enforcement reasons are set forth in subpart D of 15 CFR part 904.

(426) (h) The applicant for or holder of a National Marine Sanctuary permit may appeal the denial, conditioning, amendment, suspension or revocation of the permit in accordance with the procedures set forth in §922.50.

(427) (i) A permit issued pursuant to this section other than a Special-use permit is nontransferable. Special-use permits may be transferred, sold, or assigned with the written approval of the Director. The permittee shall provide the Director with written notice of any proposed transfer, sale, or assignment no less than 30 days prior to its proposed consummation. Transfers, sales, or assignments consummated in violation of this requirement shall be considered a material breach of the Special-use permit, and the permit shall be considered void as of the consummation of any such transfer, sale, or assignment.

(428) (j) The permit or a copy thereof shall be maintained in legible condition on board all vessels or aircraft used in the conduct of the permitted activity and the displayed for inspection upon the request of any authorized officer.

(429) (k) Any permit issued pursuant to this section shall be subject to the following terms and conditions:

(430) (1) All permitted activities shall be conducted in a manner that does not destroy, cause the loss of, or injure Sanctuary resources or qualities, except to the extent that such may be specifically authorized.

(431) (2) The permittee agrees to hold the United States harmless against any claims arising out of the conduct of the permitted activities.

(432) (3) All necessary Federal, State, and local permits from all agencies with jurisdiction over the proposed activities shall be secured before commencing field operations.

(433) (l) In addition to the terms and conditions listed in paragraph (k) of this section, any permit authorizing the research/recovery of historical resources shall be subject to the following terms and conditions:

(434) (1) A professional archaeologist shall be in charge of planning, field recovery operations, and research analysis.

(435) (2) An agreement with a conservation laboratory shall be in place before field recovery operations are begun, an approved nautical conservator shall be in charge of planning, conducting, and supervising the conservation of any artifacts and other materials recovered.

(436) (3) A curation agreement with a museum or facility for curation, public access and periodic public display, and maintenance of the recovered historical resources shall be in place before commencing field operations (such agreement for the curation and display of recovered historical resources may provide for the release of public artifacts for deaccession/transfer if such deaccession/transfer is consistent with preservation, research, education, or other purposes of the designation of the designation and management of the Sanctuary. Deaccession/transfer of historical resources requires a Special-use permit issued pursuant to paragraph (d) of this section and such deaccession/transfer shall be executed in accordance with the requirements of the SCR Agreement).

(437) (4) The site's archaeological information is fully documented, including measured drawings, site maps

drawn to professional standards, and photographic records.

(438) (m) In addition to the terms and conditions listed in paragraph (k) and (l) of this section, any permit issued pursuant to this section is subject to such other terms and conditions, including conditions governing access to, or use of, Sanctuary resources, as the Director deems reasonably necessary or appropriate and in furtherance of the purposes for which the Sanctuary is designated. Such terms and conditions may include, but are not limited to:

(439) (1) Any data or information obtained under the permit shall be made available to the public.

(440) (2) A NOAA official shall be allowed to observe any activity conducted under the permit.

(441) (3) The permittee shall submit one or more reports on the status, progress, or results of any activity authorized by the permit.

(442) (4) The permittee shall submit an annual report to the Director not later than December 31 of each year on activities conducted pursuant to the permit. The report shall describe all activities conducted under the permit and all revenues derived from such activities during the year and/or term of the permit.

(443) (5) The permittee shall purchase and maintain general liability insurance or other acceptable security against potential claims for destruction, loss of, or injury to Sanctuary resources arising out of the permitted activities. The amount of insurance or security should be commensurate with an estimated value of the Sanctuary resources in the permitted area. A copy of the insurance policy or security instrument shall be submitted to the Director.

**§992.167 Permits for access to the Tortugas Ecological Reserve.**

(444) (a) A person may enter the Tortugas North area of the Tortugas Ecological Reserve other than for passage without interruption through the reserve, for law enforcement purposes, or for purposes of monitoring pursuant to paragraph (d)(2) of §922.164, if authorized by a valid access permit issued pursuant to §922.167.

(445) (b)(1) Access permits must be requested at least 72 hours but no longer than one month before the date the permit is desired to be effective. Access permits do not require written applications or the payment of any fee. Permits may be requested via telephone or radio by contacting FKNMS at any of the following numbers:

(446) Key West office: telephone: 305-292-0311

(447) Marathon office: telephone: 305-743-2437

(448) (2) The following information must be provided, as applicable:

(449) (i) Vessel name.

(450) (ii) Name, address, and telephone number of owner and operator.

(451) (iii) Name, address, and telephone number of applicant.

(452) (iv) USCG documentation, state license, or registration number.

(453) (v) Home port.

(454) (vi) Length of vessel and propulsion type (i.e., motor or sail).

(455) (vii) Number of divers.

(456) (viii) Requested effective date and duration of permit (2 weeks, maximum).

(457) (c) The Sanctuary Superintendent will issue a permit to the owner or to the owner's representative for the vessel when all applicable information has been provided. The Sanctuary Superintendent will provide a permit number to the applicant and confirm the effective date and duration period of the permit. Written confirmation of permit issuance will be provided upon request.

**§922.168 [Removed and reserved]**

**Appendix I to Subpart P of Part 922–Florida Keys National Marine Sanctuary Boundary Coordinates(Appendix based on North American Datum of 1983)**

(458) (1) The boundary of the Florida Keys National Marine Sanctuary–

(459) (a) Begins at the northeasternmost point of Biscayne National Park located at approximately 25°39'N., 80°05'W., then runs eastward to the point at 25°39'N., 80°04'W.; and

(460) (b) then runs southward and connects in succession the points at the following coordinates:

(461) (i) 25°34'N., 80°04'W.,

(462) (ii) 25°28'N., 80°05'W., and

(463) (iii) 25°21'N., 80°07'W.;

(464) (iv) 25°16'N., 80°08'W.;

(465) (c) then runs southwesterly approximating the 300-foot isobath and connects in succession the points at the following coordinates:

(466) (i) 25°07'N., 80°13'W.,

(467) (ii) 24°57'N., 80°21'W.,

(468) (iii) 24°39'N., 80°52'W.,

(469) (iv) 24°30'N., 81°23'W.,

(470) (v) 24°25'N., 81°50'W.,

(471) (vi) 24°22'N., 82°48'W.,

(472) (vii) 24°37'N., 83°06'W.,

(473) (viii) 24°46'N., 83°06'W.,

(474) (ix) 24°46'N., 82°54'W.,

(475) (x) 24°44'N., 81°55'W.,

(476) (xi) 24°51'N., 81°26'W., and

(477) (xii) 24°55'N., 80°56'W.;

(478) (d) then follows the boundary of Everglades National Park in a southerly then northeasterly direction through Florida Bay, Buttonwood Sound, Tarpon Basin, and Blackwater Sound;

(479) (e) after Division Point, then departs from the boundary of Everglades National Park and follows the western shoreline of Manatee Bay, Barnes Sound, and Card Sound;

| Appendix III to Subpart P of Part 922—Wildlife Management Areas Access Restrictions | |
|---|---|
| **Area** | **Access restrictions** |
| Bay Keys | No-motor zone (300 feet) around one key; idle speed only/no-wake zones in tidal creeks. |
| Boca Grande Key | South one-half of beach closed (beach above mean high water closed by Department of Interior). |
| Woman Key | One-half of beach and sand spit on southeast side closed (beach and sand spit above mean high water closed by Department of the Interior). |
| Cayo Agua Keys | Idle speed only/no-wake zones in all navigable tidal creeks. |
| Cotton Key | No-motor zone on tidal flat. |
| Snake Creek | No-motor zone on tidal flat. |
| Cottrell Key | No-motor zone (300 feet) around entire key. |
| Little Mullet Key | No-access buffer zone (300 feet) around entire key. |
| Big Mullet Key | No-motor zone (300 feet) around entire key |
| Crocodile Lake | No-access buffer zone (100 feet) along shoreline between March 1 and October 1. |
| East Harbor Key | No-access buffer zone (300 feet) around northernmost island. |
| Lower Harbor Keys | Idle speed only/no-wake zones in selected tidal creeks. |
| Eastern Lake Surprise | Idle speed only/no-wake zone east of highway U.S. 1. |
| Horseshoe Key | No-access buffer zone (300 feet) around main island (main island closed by Department of Interior). |
| Marquesas Keys | (i) No-motor zones (300 feet) around three smallest keys on western side of chain;<br>(ii) no-access buffer zone (300 feet) around one island at western side of chain;<br>(iii) idle speed only/no-wake zone in southwest tidal creek. |
| Tidal flat south of Marvin Key | No-access buffer zone on tidal flat |
| Mud Keys | (i) Idle speed only/no-wake zones in the two main tidal creeks;<br>(ii) two smaller creeks on west side closed. |
| Pelican Shoal | No-access buffer zone-out to 50 meters from shore between April 1 and August 31 (shoal closed by the Florida Game Freshwater Fish Commission). |
| Rodriguez Key | No-motor zone on tidal flats. |
| Dove Key | No-motor zone on tidal flats; area around the two small islands closed. |
| Tavernier Key | No-motor zone on tidal flats. |
| Sawyer Keys | Tidal creeks on south side closed. |
| Snipe Keys | (i) Idle speed only/no-wake zone in main tidal creek; (ii) no-motor zone in all other tidal creeks. |
| Upper Harbor Key | No-access buffer zone (300 feet) around entire key. |
| East Content Keys | Idle speed only/no-wake zones in tidal creeks between southwesternmost keys. |
| West Content Keys | Idle speed only/no-wake zones in selected tidal creeks; no-access buffer zone in one cove. |
| Little Crane Key | No-access buffer zone (300 feet) around entire key. |

(480) (f) then follows the southern boundary of Biscayne National Park to the southeastern most point of Biscayne National Park; and

(481) (g) then follows the eastern boundary of Biscayne National Park to the beginning point specified in paragraph (a).

(482) (2) The shoreward boundary of the Florida Keys National Marine Sanctuary is the mean high-water mark except around the Dry Tortugas where the boundary is coterminous with that of the Dry Tortugas National Park, formed by connecting in succession the point at the following coordinates:

(483) (a) 24°34'00"N., 82°54'00"W.;

(484) (b) 24°34'00"N., 82°58'00"W.;

(485) (c) 24°39'00"N., 82°58'00"W.;

(486) (d) 24°43'00"N., 82°54'00"W.;

(487) (e) 24°43'00"N., 82°52'00"W.;

(488) (f) 24°43'00"N., 82°48'00"W.;

(489) (g) 24°42'00"N., 82°46'00"W.;

(490) (h) 24°40'00"N., 82°46'00"W.,

(491) (i) 24°37'00"N., 82°48'00"W.; and

(492) (j) 24°34'00"N., 82°54'00"W.

(493) (3) The Florida Keys National Marine Sanctuary also includes the area located within the boundary formed by connecting in succession the points at the following coordinates:

(494) (a) 24°33'N., 83°09'W.;

(495) (b) 24°33'N., 83°05'W.;

(496) (c) 24°18'N., 83°05'W.;

(497) (d) 24°18'N., 83°09'W.; and

(498) (e) 24°33'N., 83°09'W.;

**Appendix II to Subpart P of Part 922–Existing Management Areas boundary coordinates**

(499) (1) The boundary of each of the Existing Management Areas is formed by connecting in succession the points at the following coordinates:

(500) National Oceanic and Atmospheric Administration

| Key Largo Management Area [Based on differential Global Positioning System data] | | |
|---|---|---|
| Point | Latitude | Longitude |
| 1 | 25°19.45'N. | 80°12.00'W. |
| 2 | 25°16.02'N. | 80°08.07'W. |
| 3 | 25°07.05'N. | 80°12.05'W. |
| 4 | 24°58.03'N. | 80°19.08'W. |
| 5 | 25°02.02'N. | 80°25.25'W. |
| 6 | 25°19.45'N. | 80°12.00'W. |

| Looe Key Management Area [Based on differential Global Positioning System data] | | |
|---|---|---|
| Point | Latitude | Longitude |
| 1 | 24°31.62'N. | 81°26.00'W. |
| 2 | 24°33.57'N. | 81°26.00'W. |
| 3 | 24°34.15'N. | 81°23.00'W. |
| 4 | 24°32.20'N. | 81°23.00'W. |
| 5 | 24°31.62'N. | 81°26.00'W. |

| United States Fish and Wildlife Service Great White Heron National Wildlife Refuge [Based on the North American Datum of 1983] | | |
|---|---|---|
| Point | Latitude | Longitude |
| 1 | 24°43.8'N. | 81°48.6'W. |
| 2 | 24°43.8'N. | 81°37.2'W. |
| 3 | 24°49.2'N. | 81°37.2'W. |
| 4 | 24°49.2'N. | 81°19.8'W. |
| 5 | 24°48.0'N. | 81°19.8'W. |
| 6 | 24°48.0'N. | 81°14.4'W. |
| 7 | 24°49.2'N. | 81°14.4'W. |
| 8 | 24°49.2'N. | 81°08.4'W. |
| 9 | 24°49.8'N. | 81°08.4'W. |
| 10 | 24°43.8'N. | 81°14.4'W. |
| 11 | 24°43.2'N. | 81°14.4'W. |
| 12 | 24°43.2'N. | 81°16.2'W. |
| 13 | 24°42.6'N. | 81°16.2'W. |
| 14 | 24°42.6'N. | 81°21.0'W. |
| 15 | 24°41.4'N. | 81°21.0'W. |
| 16 | 24°41.4'N. | 81°22.2'W. |
| 17 | 24°43.2'N. | 81°22.2'W. |
| 18 | 24°43.2'N. | 81°22.8'W. |
| 19 | 24°43.8'N. | 81°22.8'W. |
| 20 | 24°43.8'N. | 81°24.0'W. |
| 21 | 24°43.2'N. | 81°24.0'W. |
| 22 | 24°43.2'N. | 81°26.4'W. |
| 23 | 24°43.8'N. | 81°26.4'W. |
| 24 | 24°43.8'N. | 81°27.0'W |
| 25 | 24°43.2'N. | 81°27.0'W. |
| 26 | 24°43.2'N. | 81°29.4'W. |
| 27 | 24°42.6'N. | 81°29.4'W. |
| 28 | 24°42.6'N. | 81°30.6'W. |
| 29 | 24°41.4'N. | 81°30.6'W. |
| 30 | 24°41.4'N. | 81°31.2'W. |

| United States Fish and Wildlife Service Great White Heron National Wildlife Refuge [Based on the North American Datum of 1983] | | |
|---|---|---|
| Point | Latitude | Longitude |
| 31 | 24°40.8'N. | 81°31.2'W. |
| 32 | 24°40.8'N. | 81°32.4'W. |
| 33 | 24°41.4'N. | 81°32.4'W. |
| 34 | 24°41.4'N. | 81°34.2'W. |
| 35 | 24°40.8'N. | 81°34.2'W. |
| 36 | 24°48.0'N. | 81°35.4'W. |
| 37 | 24°39.6'N. | 81°35.4'W. |
| 38 | 24°39.6'N. | 81°36.0'W. |
| 39 | 24°39.0'N. | 81°36.0'W. |
| 40 | 24°39.0'N. | 81°37.2'W. |
| 41 | 24°37.8'N. | 81°37.2'W. |
| 42 | 24°37.8'N. | 81°37.8'W. |
| 43 | 24°37.2'N. | 81°37.8'W. |
| 44 | 24°37.2'N. | 81°40.2'W |
| 45 | 24°36.0'N. | 81°40.2'W |
| 46 | 24°36.0'N. | 81°40.8'W. |
| 47 | 24°35.4'N. | 81°40.8'W. |
| 48 | 24°35.4'N. | 81°42.0'W. |
| 49 | 24°36.0'N. | 81°42.0'W. |
| 50 | 24°36.0'N. | 81°48.6'W. |
| 51 | 24°43.8'N. | 81°48.6'W. |

| Key West National Wildlife Refuge [Based on the North American Datum of 1983] | | |
|---|---|---|
| Point | Latitude | Longitude |
| 1 | 24°40.0'N. | 81°49.0'W. |
| 2 | 24°40.0'N. | 82°10.0'W. |
| 3 | 24°27.0'N. | 82°10.0'W. |
| 4 | 24°27.0'N. | 81°49.0'W. |
| 5 | 24°40.0'N. | 81°49.0'W. |

(501) (2) When differential Global Positioning Systems data becomes available, these coordinates may be published in the **Federal Register** to reflect the increased accuracy of such data.

### Appendix IV to Subpart P of Part 922–Ecological Reserves Boundary Coordinates

(502) (1) The boundary of the Western Sambo Ecological Reserve is formed by connecting in succession the points at the following coordinates:

| Western Sambo [Based on differential Global Positioning System data] | | |
|---|---|---|
| Point | Latitude | Longitude |
| 1 | 24°33.70'N. | 81°40.80'W. |
| 2 | 24°28.85'N. | 81°41.90'W. |
| 3 | 24°28.50'N. | 81°43.70'W. |
| 4 | 24°33.50'N. | 81°43.10'W. |

(503) (2) The Tortugas Ecological Reserve consists of two discrete areas, Tortugas North and Tortugas South.

(504) (3) The boundary of Tortugas North is formed by connecting in succession the points at the following coordinates:

| Tortugas North | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°46.00'N. | 83°06.00'W. |
| 2 | 24°46.00'N. | 82°54.00'W. |
| 3 | 24°45.80'N. | 82°48.00'W. |
| 4 | 24°43.53'N. | 82°48.00'W. |
| 5 | 24°43.53'N. | 82°52.00'W. |
| 6 | 24°43.00'N. | 82°54.00'W. |
| 7 | 24°39.00'N. | 82°58.00'W. |
| 8 | 24°39.00'N. | 83°06.00'W. |
| 9 | 24°46.00'N. | 83°06.00'W. |

(505) (4) The boundary of Tortugas South is formed by connecting in succession the points at the following coordinates:

| Tortugas South | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°33.00'N. | 83°09.00'W. |
| 2 | 24°33.00'N. | 83°05.00'W. |
| 3 | 24°18.00'N. | 83°05.00'W. |
| 4 | 24°18.00'N. | 83°09.00'W. |
| 5 | 24°33.00'N. | 83°09.00'W. |

## Appendix V to Subpart P of Part 922–Sanctuary Preservation Areas Boundary Coordinates

(506) The boundary of each of the Sanctuary Preservation Areas (SPAs) is formed by connecting in succession the points at following coordinates:

| Alligator Reef<br>[Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°50.98'N. | 80°36.84'W. |
| 2 | 24°50.51'N. | 80°37.35'W. |
| 3 | 24°50.81'N. | 80°37.63'W. |
| 4 | 24°51.23'N. | 80°37.17'W. |
| 5 | 24°50.98'N. | 80°36.84'W. |
| Catch and release fishing by trolling only is allowed in this SPA. | | |

| Carysfort/South Carysfort Reef<br>[Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 25°13.78'N. | 80°12.00'W. |
| 2 | 25°12.03'N. | 80°12.98'W. |
| 3 | 25°12.24'N. | 80°13.77'W. |
| 4 | 25°14.13'N. | 80°12.78'W. |
| 5 | 25°13.78'N. | 80°12.00'W. |

| Cheeca Rocks<br>[Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°54.42'N. | 80°36.91'W. |
| 2 | 24°54.25'N. | 80°36.77'W. |
| 3 | 24°54.10'N. | 80°37.00'W. |
| 4 | 24°54.22'N. | 80°37.15'W. |
| 5 | 24°54.42'N. | 80°36.91'W. |

| Coffins Patch<br>[Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°41.47'N. | 80°57.68'W. |
| 2 | 24°41.12'N. | 80°57.53'W. |
| 3 | 24°40.75'N. | 80°58.33'W. |
| 4 | 24°41.06'N. | 80°58.48'W. |
| 5 | 24°41.47'N. | 80°57.68'W. |

| Conch Reef<br>[Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°57.48'N. | 80°27.47'W. |
| 2 | 24°57.34'N. | 80°27.26'W. |
| 3 | 24°56.78'N. | 80°27.52'W. |
| 4 | 24°56.96'N. | 80°27.73'W. |
| 5 | 24°57.48'N. | 80°27.47'W. |
| Catch and release fishing by trolling only is allowed in this SPA. | | |

| Davis Reef<br>[Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°55.61'N. | 80°30.27'W. |
| 2 | 24°55.41'N. | 80°30.05'W. |
| 3 | 24°55.11'N. | 80°30.35'W. |
| 4 | 24°55.34'N. | 80°30.52'W. |
| 5 | 24°55.61'N. | 80'30.27'W. |

| Dry Rocks<br>[Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 25°07.59'N. | 80°17.91'W. |
| 2 | 25°07.41'N. | 80°17.70'W. |
| 3 | 25°07.25'N. | 80°17.82'W. |
| 4 | 25°07.41'N. | 80°18.09'W. |
| 5 | 25°07.59'N. | 80°17.91'W. |

| Grecian Rocks<br>[Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 25°06.91'N. | 80°18.20'W. |
| 2 | 25°06.67'N. | 80°18.06'W. |
| 3 | 25°06.39'N. | 80°18.32'W. |
| 4 | 25°06.42'N. | 80°18.48'W. |
| 5 | 25°06.81'N. | 80°18.44'W. |

| Grecian Rocks [Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 6 | 25°06.91'N. | 80°18.20'W. |

| Eastern Dry Rocks [Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°27.92'N. | 81°50.55'W. |
| 2 | 24°27.73'N. | 81°50.33'W. |
| 3 | 24°27.47'N. | 81°50.80'W. |
| 4 | 24°27.72'N. | 81°50.86'W. |
| 5 | 24°27.29'N. | 81°50.55'W. |

| The Elbow [Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 25°08.97'N. | 80°15.63'W. |
| 2 | 25°08.95'N. | 80°15.22'W. |
| 3 | 25°08.18'N. | 80°15.64'W. |
| 4 | 25°08.50'N. | 80°16.07'W. |
| 5 | 25°08.97'N. | 80°15.63'W. |

| French Reef [Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 25°02.20'N. | 80°20.63'W. |
| 2 | 25°01.81'N. | 80°21.02'W. |
| 3 | 25°02.36'N. | 80°21.27'W. |
| 4 | 25°02.20'N. | 80°20.63'W. |

| Hen and Chickens [Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°56.38'N. | 80°32.86'W. |
| 2 | 24°56.21'N. | 80°32.63'W. |
| 3 | 24°55.86'N. | 80°32.95'W. |
| 4 | 24°56.04'N. | 80°33.19'W. |
| 5 | 24°56.38'N. | 80°32.86'W. |

| Looe Key [Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°33.24'N. | 81°24.03'W. |
| 2 | 24°32.70'N. | 81°23.85'W. |
| 3 | 24°32.52'N. | 81°32.70'W. |
| 4 | 24°33.12'N. | 81°24.81'W. |
| 5 | 24°33.24'N. | 81°24.03'W. |

| Molasses Reef [Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 25°01.00'N. | 80°22.53'W. |
| 2 | 25°01.06'N. | 80°21.84'W. |
| 3 | 25°00.29'N. | 80°22.70'W. |

| Molasses Reef [Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 4 | 25°00.72'N. | 80°22.83'W. |
| 5 | 25°01.00'N. | 80°23.34'W. |

| Newfound Harbor Key [Based on differential Global Positioning System data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°37.10'N. | 81°23.34'W. |
| 2 | 24°36.85'N. | 81°23.28'W. |
| 3 | 24°36.74'N. | 81°23.80'W. |
| 4 | 24°37.00'N. | 81°23.86'W. |
| 5 | 24°37.10'N. | 81°23.34'W. |

| Rock Key [Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°27.48'N. | 81°51.35'W. |
| 2 | 24°27.30'N. | 81°51.15'W. |
| 3 | 24°27.21'N. | 81°51.60'W. |
| 4 | 24°27.45'N. | 81°51.65'W. |
| 5 | 24°27.48'N. | 81°51.35'W. |

| Sand Key [Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°27.58'N. | 81°52.29'W. |
| 2 | 24°27.01'N. | 81°52.32'W. |
| 3 | 24°27.02'N. | 81°52.95'W. |
| 4 | 24°27.61'N. | 81°52.94'W. |
| 5 | 24°27.58'N. | 81°52.29'W. |
| Catch and release fishing by trolling only is allowed in this SPA. | | |

| Sombrero Key [Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°37.91'N. | 81°06.78'W. |
| 2 | 24°37.50'N. | 81°06.19'W. |
| 3 | 24°37.25'N. | 81°06.89'W. |
| 4 | 24°37.91'N. | 81°06.78'W. |
| Catch and release fishing by trolling only is allowed in this SPA. | | |

## Appendix VI to Subpart P of Part 922–Special-Use Areas Boundary Coodinates and Use Designations

(507) The boundary of each of the Special-Use Areas is formed by connecting in succession the points at the following coordinates:

| Conch Reef (Research Only)—[Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°56.83'N. | 80°27.26'W. |
| 2 | 24°57.10'N. | 80°26.93'W. |

| Conch Reef (Research Only)—[Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 3 | 24°56.99'N. | 80°27.42'W. |
| 4 | 24°57.34'N. | 80°27.26'W. |
| 5 | 24°56.83'N. | 80°27.26'W. |

| Eastern Sambo (Research Only)—[Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°29.84'N. | 81°39.59'W. |
| 2 | 24°29.55'N. | 81°39.35'W. |
| 3 | 24°29.37'N. | 81°39.96'W. |
| 4 | 24°29.77'N. | 81°40.03'W. |
| 5 | 24°29.84'N. | 81°39.59'W. |

| Looe Key (Research Only)—[Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°34.17'N. | 81°23.01'W. |
| 2 | 24°33.98'N. | 81°22.96'W. |
| 3 | 24°33.84'N. | 81°23.60'W. |
| 4 | 24°34.23'N. | 81°23.68'W. |
| 5 | 24°34.17'N. | 81°23.01'W. |

| Tennessee Reef (Research Only)—[Based on differential Global Positioning Systems data] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 24°44.77'N. | 80°47.12'W. |
| 2 | 24°45.57'N. | 80°46.98'W. |
| 3 | 24°44.68'N. | 80°46.59'W. |
| 4 | 24°44.95'N. | 80°45.74'W. |
| 5 | 24°44.77'N. | 80°47.12'W. |

## Appendix VII to Subpart P of Part 922–Areas To Be Avoided Boundary Coordinates

| In The Vicinity of the Florida Keys [Reference Charts: United States 11466, 27th Edition—September 1, 1990 and United States 11450, 4th Edition—August 11, 1990] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 1 | 25°45.00'N. | 80°06.10'W. |
| 2 | 25°38.70'N. | 80°02.70'W. |
| 3 | 25°22.00'N. | 80°03.00'W. |
| 4 | 25°06.38'N. | 80°10.48'W. |
| 5 | 24°56.37'N. | 80°19.26'W. |
| 6 | 24°37.90'N. | 81°47.30'W. |
| 7 | 24°29.20'N. | 81°17.30'W. |
| 8 | 24°22.30'N. | 81°43.17'W. |
| 9 | 24°28.00'N. | 81°43.17'W. |
| 10 | 24°28.70'N. | 81°43.50'W. |
| 11 | 24°29.80'N. | 81°43.17'W. |

| In The Vicinity of the Florida Keys [Reference Charts: United States 11466, 27th Edition—September 1, 1990 and United States 11450, 4th Edition—August 11, 1990] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 12 | 24°33.10'N. | 81°35.15'W. |
| 13 | 24°33.60'N. | 81°26.00'W. |
| 14 | 24°38.20'N. | 81°07.00'W. |
| 15 | 24°43.20'N. | 80°53.20'W. |
| 16 | 24°46.10'N. | 80°46.15'W. |
| 17 | 24°51.10'N. | 80°37.10'W. |
| 18 | 24°57.50'N. | 80°27.50'W. |
| 19 | 25°09.90'N. | 80°16.20'W. |
| 20 | 25°24.00'N. | 80°09.10'W. |
| 21 | 25°31.50'N. | 80°07.00'W. |
| 22 | 25°39.70'N. | 80°06.85'W. |
| 23 | 25°45.00'N. | 80°06.10'W. |

| In the Vicinity of Key West Harbor (Reference Chart: United States 11434, 21st Edition–August 11, 1990.) | | |
|---|---|---|
| 24 | 24°27.95'N. | 81°48.65'W. |
| 25 | 24°23.00'N. | 81°53.50'W. |
| 26 | 24°26.60'N. | 81°58.50'W. |
| 27 | 24°27.75'N. | 81°55.70'W. |
| 28 | 24°29.35'N. | 81°53.40'W. |
| 29 | 24°29.35'N. | 81°50.00'W. |
| 30 | 24°27.95'N. | 81°48.65'W. |

| Area Surrounding the Marquesas Keys [Reference Chart: United States 11434, 21st Edition—August 11, 1990] | | |
|---|---|---|
| **Point** | **Latitude** | **Longitude** |
| 31 | 24°26.60'N. | 81°59.55'W. |
| 32 | 24°23.00'N. | 82°03.50'W. |
| 33 | 24°23.60'N. | 82°27.80'W. |
| 34 | 24°34.50'N. | 82°37.50'W. |
| 35 | 24°43.00'N. | 82°26.50'W. |
| 36 | 24°38.31'N. | 81°54.06'W. |
| 37 | 24°37.91'N. | 81°53.40'W. |
| 38 | 24°36.15'N. | 81°51.78'W. |
| 39 | 24°34.40'N. | 81°50.60'W. |
| 40 | 24°33.44'N. | 81°49.73'W. |
| 41 | 24°31.20'N. | 81°52.10'W. |
| 42 | 24°28.70'N. | 81°56.80'W. |
| 43 | 24°26.60'N. | 81°59.55'W. |

| Area Surrounding the Dry Tortugas Islands (Reference Chart: United States 11434, 21st Edition–August 11, 1990.) | | |
|---|---|---|
| 44 | 24°32.00'N. | 82°53.50'W. |
| 45 | 24°32.00'N. | 83°00.05'W. |
| 46 | 24°39.70'N. | 83°00.05'W. |
| 47 | 24°45.60'N. | 82°54.40'W. |
| 48 | 24°45.60'N. | 82°47.20'W. |

| | | |
|---|---|---|
| 49 | 24°42.80'N. | 82°43.90'W. |
| 50 | 24°39.50'N. | 82°43.90'W. |
| 51 | 24°35.60'N. | 82°46.40'W. |
| 52 | 24°32.00'N. | 82°53.50'W. |

# TITLE 33–NAVIGATION AND NAVIGABLE WATERS

## Part 26–Vessel Bridge-to-Bridge Radiotelephone Regulations

### §26.01 Purpose.

(508) (a) The purpose of this part is to implement the provisions of the Vessel Bridge-to-Bridge Radiotelephone Act. This part –

(509) (1) Requires the use of the vessel bridge-to-bridge radiotelephone;

(510) (2) Provides the Coast Guard's interpretation of the meaning of important terms in the Act;

(511) (3) Prescribes the procedures for applying for an exemption from the Act and the regulations issued under the Act and a listing of exemptions.

(512) (b) Nothing in this part relieves any person from the obligation of complying with the rules of the road and the applicable pilot rules.

### §26.02 Definitions.

(513) For the purpose of this part and interpreting the Act –

(514) Act means the "Vessel Bridge-to-Bridge Radiotelephone Act", 33 U.S.C. sections 1201-1208;

(515) Length is measured from end to end over the deck excluding sheer;

(516) Power-driven vessel means any vessel propelled by machinery; and

(517) Secretary means the Secretary of the Department in which the Coast Guard is operating;

(518) Territorial sea means all waters as defined in §2.22(a)(1) of this chapter.

(519) Towing vessel means any commercial vessel engaged in towing another vessel astern, alongside, or by pushing ahead.

(520) Vessel Traffic Services (VTS) means a service implemented under Part 161 of this chapter by the United States Coast Guard designed to improve the safety and efficiency of vessel traffic and to protect the environment. The VTS has the capability to interact with marine traffic and respond to traffic situations developing in the VTS area.

(521) Vessel Traffic Service Area or VTS Area means the geographical area encompassing a specific VTS area of service as described in Part 161 of this chapter. This area of service may be subdivided into sectors for the purpose of allocating responsibility to individual Vessel Traffic Centers or to identify different operating requirements.

(522) **Note:** Although regulatory jurisdiction is limited to the navigable waters of the United States, certain vessels will be encouraged or may be required, as a condition of port entry to report beyond this area to facilitate traffic management within the VTS area.

### §26.03 Radiotelephone required.

(523) (a) Unless an exemption is granted under §26.09 and except as provided in paragraph (a)(4) of this section, this part applies to:

(524) (1) Every power-driven vessel of 20 meters or over in length while navigating:

(525) (2) Every vessel of 100 gross tons and upward carrying one or more passengers for hire while navigating:

(526) (3) Every towing vessel of 26 feet or over in length while navigating; and

(527) (4) Every dredge and floating plant engaged in or near a channel or fairway in operations likely to restrict or affect navigation of other vessels except for an unmanned or intermittently manned floating plant under the control of a dredge.

(528) (b) Every vessel, dredge, or floating plant described in paragraph (a) of this section must have a radiotelephone on board capable of operation from its navigational bridge, or in the case of a dredge, from its main control station, and capable of transmitting and receiving on the frequency or frequencies within the 156-162 Mega-Hertz band using the classes of emissions designated by the Federal Communications Commission for the exchange of navigational information.

(529) (c) The radiotelephone required by paragraph (b) of this section must be carried on board the described vessels, dredges, and floating plants upon the navigable waters of the United States.

(530) (d) The radiotelephone required by paragraph (b) of this section must be capable of transmitting and receiving on VHF FM channel 22A (157.1 MHz).

(531) (e) While transiting any of the following waters, each vessel described in paragraph (a) of this section also must have on board a radiotelephone capable of transmitting and receiving on VHF FM channel 67 (156.375 MHz):

(532) (1) The lower Mississippi River from the territorial sea boundary, and within either the Southwest Pass safety fairway or the South Pass safety fairway specified in 33 CFR 166.200, to mile 242.4 AHP (Above Head of Passes) near Baton Rouge;

(533) (2) The Mississippi River-Gulf Outlet from the territorial sea boundary, and within the Mississippi River-Gulf outlet Safety Fairway specified in 33 CFR 166.200, to that channel's junction with Inner Harbor Navigation Canal; and

(534) (3) The full length of the Inner Harbor Navigation Canal from its junction with the Mississippi River to that canal's entry to Lake Pontchartain at the New Seabrook vehicular bridge.

(535) (f) In addition to the radiotelephone required by paragraph (b) of this section each vessel described in paragraph (a) of this section while transiting any waters within a Vessel Traffic Service Area, must have on board a radiotelephone capable of transmitting and receiving on the VTS designated frequency in Table 161.12(c) (VTS and VMRS Centers, Call Signs/MMSI, Designated Frequencies, and Monitoring Areas).

(536) **Note:** A single VHF-FM radio capable of scanning or sequential monitoring (often referred to as "dual watch" capability) will not meet the requirements for two radios.

**§26.04 Use of the designated frequency.**

(537) (a) No person may use the frequency designated by the Federal Communications Commission under section 8 of the Act, 33 U.S.C. 1207(a), to transmit any information other than information necessary for the safe navigation of vessels or necessary tests.

(538) (b) Each person who is required to maintain a listening watch under section 5 of the Act shall, when necessary, transmit and confirm, on the designated frequency, the intentions of his vessel and any other information necessary for the safe navigation of vessels.

(539) (c) Nothing in these regulations may be construed as prohibiting the use of the designated frequency to communicate with shore stations to obtain or furnish information necessary for the safe navigation of vessels.

(540) (d) On the navigable waters of the United States, channel 13 (156.65 MHz) is the designated frequency required to be monitored in accordance with §26.05(a) except that in the area prescribed in §26.03(e), channel 67 (156.375 MHz) is the designated frequency.

(541) (e) On those navigable waters of the United States within a VTS area, an additional designated VTS frequency is an additional designated frequency required to be monitored in accordance with §26.05.

(542) **Note:** As stated in 47 CFR 80.148(b), a VHF watch on Channel 16 (156.800 MHz) is not required on vessels subject to the Vessel Bridge-to-Bridge Radiotelephone Act and participating in a Vessel Traffic Service (VTS) system when the watch is maintained on both the vessel bridge-to-bridge frequency and a designated VTS frequency.

**§26.05 Use of radiotelephone.**

(543) Section 5 of the Act states that the radiotelephone required by this Act is for the exclusive use of the master or person in charge of the vessel, or the person designated by the master or person in charge to pilot or direct the movement of the vessel, who shall maintain a listening watch on the designated frequency. Nothing herein shall be interpreted as precluding the use of portable radiotelephone equipment to satisfy the requirements of this Act.

**§26.06 Maintenance of radiotelephone; failure of radiotelephone. Section 6 of the Act states–**

(544) (a) Whenever radiotelephone capability is required by this Act, a vessel's radiotelephone equipment shall be maintained in effective operating condition. If the radiotelephone equipment carried aboard a vessel ceases to operate, the master shall exercise due diligence to restore it or cause it to be restored to effective operating condition at the earliest practicable time. The failure of a vessel's radiotelephone equipment shall not, in itself, constitute a violation of this Act, nor shall it obligate the master of any vessel to moor or anchor his vessel; however, the loss of radiotelephone capability shall be given consideration in the navigation of the vessel.

**§26.07 Communications.**

(545) No person may use the service of, and no person may serve as, a person required to maintain a listening watch under section 5 of the Act, 33 U.S.C. 1204, unless the person can communicate in the English language.

**§26.08 Exemption procedures.**

(546) (a) The Commandant has redelegated to the Assistant Commandant for Marine Safety, Security and Environmental Protection, U.S. Coast Guard Headquarters, with the reservation that this authority shall not be further redelegated, the authority to grant exemptions from provisions of the Vessel Bridge-to-Bridge Radiotelephone Act and this part.

(547) (b) Any person may petition for an exemption from any provision of the Act or this part;

(548) (c) Each petition must be submitted in writing to U.S. Coast Guard, Marine Safety, Security and Environmental Protection, (CG-5), 2100 2nd St. SW., Stop 7355, Washington, DC 20593-7355, and must state:

(549) (1) The provisions of the Act or this part from which an exemption is requested; and

(550) (2) The reasons why marine navigation will not be adversely affected if the exemption is granted and if the exemption relates to a local communication system how that system would fully comply with the intent of the concept of the Act but would not conform in detail if the exemption is granted.

**§26.09 List of exemptions.**

(551) (a) All vessels navigating on those waters governed by the navigation rules for Great Lakes and their connecting and tributary waters (33 U.S.C. 241 et seq.) are exempt from the requirements of the Vessel Bridge-to-Bridge Radiotelephone Act and this part until May 6, 1975.

(552) (b) Each vessel navigating on the Great Lakes as defined in the Inland Navigational Rules Act of 1980 (33 U.S.C. 2001 et seq.) and to which the Vessel Bridge-to-Bridge Radiotelephone Act (33 U.S.C. 1201-1208) applies is exempt from the requirements in 33 U.S.C. 1203, 1204, and 1205 and the regulations under §§26.03, 26.04, 26.05, 26.06, and 26.07. Each of these vessels and

each person to whom 33 U.S.C. 1208(a) applies must comply with Articles VII, X, XI, XII, XIII, XV, and XVI and Technical Regulations 1-9 of "The Agreement Between the United States of America and Canada for Promotion of Safety on the Great Lakes by Means of Radio, 1973."

## Part 70–Interference with or Damage to Aids to Navigation

### §70.05–10 Revocation of merchant mariner credential officer endorsement or license

(553) Every master, pilot, and engineer, or person or persons acting in such capacity, respectively, on board any vessel who shall willfully injure or destroy an aid to navigation established or maintained by the United States shall be deemed guilty of violating the provisions of §70.05-1 and shall upon conviction be punished as provided in §70.05-5 and shall also have his merchant mariner credential officer endorsement or license revoked or suspended for a term to be fixed by the judge before whom tried and convicted.

### §70.05–20 Report Required

(554) Whenever any vessel collides with an aid to navigation established and maintained by the United States or any private aid to navigation established or maintained in accordance with Part 64, 66, 67 or 68 of this subchapter, or is connected with any such collision, it shall be the duty of the person in charge of such vessel to report the accident to the nearest Officer in Charge, Marine Inspection, in accordance with 46 CFR 4.

## Part 80–COLREGS Demarcation Lines

### §80.01 General basis and purpose of demarcation lines.

(555) (a) The regulations in this part establish the lines of demarcation delineating those waters upon which mariners shall comply with the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) and those waters upon which mariners shall comply with the Inland Navigation Rules.

(556) (b) The waters inside of the lines are Inland Rules waters. The waters outside the lines are COLREGS waters.

(557) (c) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

### §80.510 Chesapeake Bay Entrance, Va.

(558) A line drawn from Cape Charles Light to Cape Henry Light.

### §80.515 Cape Henry, Va. to Cape Hatteras, N.C.

(559) (a) A line drawn from Rudee Inlet Jetty Light 2 to Rudee Inlet Jetty Light 1.

(560) (b) A line formed by the centerline of the highway bridge across Oregon Inlet.

### §80.520 Cape Hatteras, N.C. to Cape Lookout, N.C.

(561) (a) A line drawn from Hatteras Inlet Lookout Tower (30°11.8'N., 75°44.9'W.) 255° true to the eastern end of Ocracoke Island.

(562) (b) A line drawn from the westernmost extremity of Ocracoke Island at 35°04.0'N., 76°00.8'W. to the northeastern extremity of Portsmouth Island at 35°03.7'N., 76°02.3'W.

(563) (c) A line drawn across Drum Inlet parallel with the general trend of the highwater shoreline.

### §80.525 Cape Lookout, N.C. to Cape Fear, N.C.

(564) (a) A line drawn from Cape Lookout Light to the seaward tangent of the southeastern end of Shackleford Banks.

(565) (b) A line drawn from Morehead City Channel Range Front Light to the seaward extremity of the Beaufort Inlet west jetty.

(566) (c) A line drawn from the southernmost extremity of Bogue Banks at 34°38.7'N., 77°06.0'W. across Bogue Inlet to the northernmost extremity of Bear Beach at 34°38.5'N., 77°07.1'W.

(567) (d) A line drawn from the southeasternmost extremity on the southwest side of New River inlet at 34°31.5'N., 77°20.6'W., to the seaward tangent of the shoreline on the northeast side on New River Inlet.

(568) (e) A line drawn across New Topsail Inlet between the closest extremities of the shore on either side of the inlet from 34°20.8'N., 77°39.2'W. to 34°20.6'N., 77°39.6'W.

(569) (f) A line drawn from the seaward extremity of the jetty on the northeast side of Masonboro Inlet to the seaward extremity of the jetty on the southeast side of the Inlet.

(570) (g) Except as provided elsewhere in this section from Cape Lookout to Cape Fear, lines drawn parallel with the general trend of the highwater shoreline across the entrance of small bays and inlets.

### §80.530 Cape Fear, N.C. to Little River Inlet, N.C.

(571) (a) A line drawn from the abandoned lighthouse charted in approximate position 33°52.4'N., 78°00.1'W. across the Cape Fear River Entrance to Oak Island Light.

(572) (b) Except as provided elsewhere in this section from Cape Fear to Little River Inlet, lines drawn parallel with the general trend of the highwater shoreline across the entrance to small inlets.

**§80.703 Little River Inlet, S.C. to Cape Romain, S.C.**

(573) (a) A line drawn from the westernmost extremity of the sand spit on Bird Island to the easternmost extremity of Waties Island across Little River Inlet.

(574) (b) From Little River Inlet, a line drawn parallel with the general trend of the highwater shoreline across Hog Inlet; thence a line drawn across the seaward ends of the Murrels Inlet jetties; thence a line drawn parallel with the general trend of the highwater shoreline across Midway Inlet, Pawleys Inlet, and North Inlet.

(575) (c) A line drawn from the charted position of Winyah Bay North Jetty End Buoy 2N south to the Winyah Bay South Jetty.

(576) (d) A line drawn from Santee Point to the seaward tangent of Cedar Island.

(577) (e) A line drawn from Cedar Island Point west to Murphy Island.

(578) (f) A north-south line (longitude 79°20.3'W.) drawn from Murphy Island to the northernmost extremity of Cape Island Point.

**§80.707 Cape Romain, S.C. to Sullivans Island, S.C.**

(579) (a) A line drawn from the western extremity of Cape Romain 292° true to Racoon Key on the west side of Racoon Creek.

(580) (b) A line drawn from the westernmost extremity of Sandy Point across Bull Bay to the northernmost extremity of Northeast Point.

(581) (c) A line drawn from the southernmost extremity of Bull Island to the easternmost extremity of Capers Island.

(582) (d) A line formed by the overhead power cable from Capers Island to Dewees Island.

(583) (e) A line formed by the overhead power cable from Dewees Island to Isle of Palms.

(584) (f) A line formed by the centerline of the highway bridge between Isle of Palms and Sullivans Island over Breach Inlet.

**§80.710 Charleston Harbor, S.C.**

(585) (a) A line formed by the submerged north jetty from the shore to the west end of the north jetty.

(586) (b) A line drawn from across the seaward extremity of the Charleston Harbor Jetties.

(587) (c) A line drawn from the west end of the South Jetty across the South Entrance to Charleston Harbor to shore on a line formed by the submerged south jetty.

**§80.712 Morris Island, S.C. to Hilton Head Island, S.C.**

(588) (a) A line drawn from the easternmost tip of Folley Island to the abandoned lighthouse tower on the north side of Lighthouse Inlet; thence west to the shoreline of Morris Island.

(589) (b) A straight line drawn from the seaward tangent of Folly Island through Folly River Daybeacon 10 across Stono River to the shoreline of Sandy Point.

(590) (c) A line drawn from the southernmost extremity of Seabrook Island 257° true across the North Edisto River Entrance to the shore of Botany Bay Island.

(591) (d) A line drawn from the microwave antenna tower on Edisto Beach charted in approximate position latitude 32°29.3'N. longitude 80°19.2'W. across St. Helena Sound to the abandoned lighthouse tower on Hunting Island.

(592) (e) A line formed by the centerline of the highway bridge between Hunting Island and Fripp Island.

(593) (f) A line drawn from the westernmost extremity of Bull Point on Capers Island to Port Royal Sound Channel Range Rear Light, 32°13.7'N., 80°36.0'W.; thence 259° true to the easternmost extremity of Hilton Head at 32°13.0'N., 80°40.1'W.

**§80.715 Savannah River.**

(594) A line drawn from the southernmost tank on Hilton Head Island charted in approximate position 32°06.7'N., 80°49.3'W. to Bloody Point Range Rear Light; thence to Tybee Range Rear Light.

**§80.717 Tybee Island, Ga. to St. Simons Island, Ga.**

(595) (a) A line drawn from the southernmost extremity of Savannah Beach on Tybee Island 255° true across Tybee Inlet to the shore of Little Tybee Island south of the entrance to Buck Hammock Creek.

(596) (b) A straight line drawn from the northeasternmost extremity of Wassaw Island 031° true through Tybee River Daybeacon 1 to the shore of Little Tybee Island.

(597) (c) A line drawn approximately parallel with the general trend of the highwater shorelines from the seaward tangent of Wassaw Island to the seaward tangent of Bradley Point on Ossabaw Island.

(598) (d) A north-south line (longitude 81°08.4'W.) drawn from the southernmost extremity of Ossabaw Island to St. Catherine Island.

(599) (e) A north-south line (longitude 81°10.6'W.) drawn from the southernmost extremity of St. Catherines Island to Northeast Point on Blackbeard Island.

(600) (f) A line following the general trend of the seaward highwater shoreline across Cabretta Inlet.

(601) (g) A north-south line (longitude 81°16.9'W.) drawn from the southwesternmost point on Sapelo Island to Wolf Island.

(602) (h) A north-south line (longitude 81°17.1'W.) drawn from the southeasternmost point of Wolf Island to the northeasternmost point on Little St. Simons Island.

(603) (i) A line drawn from the northeastern extremity of Sea Island 045° true to Little St. Simons Island.

(604) (j) An east-west line from the southernmost extremity of Sea Island across Goulds Inlet to St. Simons Island.

**§80.720 St. Simons Island, Ga. to Amelia Island, Fla.**

(605) (a) A line drawn from St. Simons Light to the northernmost tank on Jekyll Island charted in approximate position latitude 31°05.9'N. longitude 81°24.5'W.

(606) (b) A line drawn from the southernmost tank on Jekyll Island charted in approximate position latitude 31°01.6'N. longitude 81°25.2'W. to coordinate latitude 30°59.4'N. longitude 81°23.7'W. (0.5 nautical mile east of the charted position of St. Andrew Sound Lighted Buoy 32); thence to the abandoned lighthouse tower on the north end of Little Cumberland Island charted in approximate position 30°58.5'N., 81°24.8'W.

(607) (c) A line drawn across the seaward extremity of the St. Marys River Entrance Jetties.

**§80.723 Amelia Island, Fla. to Cape Canaveral, Fla.**

(608) (a) A line drawn from the southernmost extremity of Amelia Island to the northeasternmost extremity of Little Talbot Island.

(609) (b) A line formed by the centerline of the highway bridge from Little Talbot Island to Fort George Island.

(610) (c) A line drawn across the seaward extremity of the St. Johns River Entrance Jetties.

(611) (d) A line drawn across the seaward extremity of the St. Augustine Inlet Jetties.

(612) (e) A line formed by the centerline of the highway bridge over Matanzas Inlet.

(613) (f) A line drawn across the seaward extremity of the Ponce de Leon Inlet Jetties.

**§80.727 Cape Canaveral, Fla. to Miami Beach, Fla.**

(614) (a) A line drawn across the seaward extremity of the Port Canaveral Entrance Channel Jetties.

(615) (b) A line drawn across the seaward extremity of the Sebastian Inlet Jetties.

(616) (c) A line drawn across the seaward extremity of the Fort Pierce Inlet Jetties.

(617) (d) A north-south line (longitude 80°09.7'W.) drawn across St. Lucie Inlet.

(618) (e) A line drawn from the seaward extremity of Jupiter Inlet North Jetty to the northeast extremity of the concrete apron on the south side of Jupiter Inlet.

(619) (f) A line drawn across the seaward extremity of the Lake Worth Inlet Jetties.

(620) (g) A line drawn across the seaward extremity of the Boynton Inlet Jetties.

(621) (h) A line drawn from Boca Raton Inlet North Jetty Light 2 to Boca Raton Inlet South Jetty Light 1.

(622) (i) A line drawn from Hillsboro Inlet Light to Hillsboro Inlet Entrance Light 2; thence to Hillsboro Inlet Entrance Light 1; thence west to the shoreline.

(623) (j) A line drawn across the seaward extremity of the Port Everglades Entrance Jetties.

(624) (k) A line formed by the centerline of the highway bridge over Bakers Haulover Inlet.

**§80.730 Miami Harbor, Fla.**

(625) A line drawn across the seaward extremity of the Miami Harbor Government Cut Jetties.

**§80.735 Miami, Fla. to Long Key, Fla.**

(626) (a) A line drawn from the southernmost extremity of Fisher Island **212°** true to the point in latitude 25°45.0'N. longitude 80°08.6'W. on Virginia Key.

(627) (b) A line formed by the centerline of the highway bridge between Virginia Key and Key Biscayne.

(628) (c) A line drawn from Cape Florida Light to the northernmost extremity on Soldier Key.

(629) (d) A line drawn from the southernmost extremity on Soldier Key to the northernmost extremity of the Ragged Keys.

(630) (e) A line drawn from the Ragged Keys to the southernmost extremity of Angelfish Key following the general trend of the seaward shoreline.

(631) (f) A line drawn on the centerline of the Overseas Highway (U.S. 1) and bridges from latitude 25°19.3'N. longitude 80°16.0'W. at Little Angelfish Creek to the radar dome charted on Long Key at approximate position latitude 24°49.3'N. longitude 80°49.2'W.

**§80.740 Long Key, Fla. to Cape Sable, Fla.**

(632) A line drawn from the microwave tower charted on Long Key at approximate position latitude 24°48.8'N. longitude 80°49.6'W. to Long Key Light 1; thence to Arsenic Bank Light 2; thence to Sprigger Bank Light 5; thence to Schooner Bank Light 6; thence to Oxfoot Bank Light 10; thence to East Cape Light 2; thence through East Cape Daybeacon 1A to the shoreline at East Cape.

## Part 110–Anchorage Regulations

**§110.1 General.**

(633) (a) The areas described in subpart A of this part are designated as special anchorage areas for purposes of 33 U.S.C. §§2030(g) and 2035(j). Vessels of less than 20 meters in length, and barges, canal boats, scows, or other nondescript craft, are not required to sound signals required by rule 35 of the Inland Navigation Rules (33 U.S.C. 2035). Vessels of less than 20 meters are not required to exhibit anchor lights or shapes required by rule 30 of the Inland Navigation Rules (33 U.S.C. 2030).

(634) (b) The anchorage grounds for vessels described in Subpart B of this part are established, and the rules and regulations in relation thereto adopted, pursuant to the authority contained in section 7 of the act of March 4, 1915, as amended (38 Stat. 1053; 33 U.S.C. 471).

(635) (c) All bearings in the part are referred to true meridian.

(636) (d) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD

83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

## Subpart A–Special Anchorage Areas

### §110.72b St. Simons Island, Ga.

(637) The area beginning at a point southwest of Frederica River Bridge, St. Simons Island Causeway at
(638) 31°09'58"N., 81°24'55"W.; thence southwesterly to
(639) 31°09'42"N., 81°25'10"W.; thence westerly to the shoreline at
(640) 31°09'45"N., 81°25'20"W.; thence northeasterly along the shoreline to
(641) 31°10'02"N., 81°25'00"W.; thence southeasterly to the point of origin.

### §110.72d Ashley River, SC.

(642) All waters on the southwest portion of the Ashley River encompassed within the following points; beginning at
(643) 32°46'42.7"N., 79°57'19.3"W.; thence southwest to
(644) 32°46'38.0"N., 79°57'24.0"W.; thence southeast to
(645) 32°46'32.0"N., 79°57'15.5"W.; thence southeast to
(646) 32°46'29.0"N., 79°57'00.9"W.; thence back to origin following the southwest boundary of the Ashley River Channel. All coordinates are North American Datum 1983.

### §110.73 St. Johns River, Fla.

(647) (a) Area A. The waters lying within an area bounded by a line beginning at a point located at the west bank of St. Johns River at
(648) 30°15'11", 81°41'23"; thence to
(649) 30°15'13", 81°41'14"; thence to
(650) 30°15'03", 81°41'11"; thence to
(651) 30°15'04", 81°41'20"; and thence to the point of beginning.
(652) (b) Area B. The waters lying within an area bounded by a line beginning at
(653) 30°15'03", 81°41'28"; thence to
(654) 30°15'02", 81°41'10"; thence to
(655) 30°14'56", 81°41'08"; thence to
(656) 30°14'54.5", 81°41'10.5"; and thence to the point of beginning.

### §110.73a Indian River at Sebastian, Florida.

(657) Beginning at a point on the shoreline at
(658) 27°49'40"N., 80°28'26"W.; thence **060°** to
(659) 27°49'46"N., 80°28'13"W.; thence **156°** to
(660) 27°49'31"N., 80°28'05"W.; thence **242°** to
(661) 27°49'25"N., 80°28'18"W.; thence northerly along the shoreline to the point of beginning.
(662) **Note:** This area is principally for use by commercial fishing vessels less than 65 feet in length.

### §110.73b Indian River at Vero Beach, Fla.

(663) (a) Area A. Beginning at a point located on the eastern shore of Fritz Island at
(664) 27°39'32.5"N., 80°22'20.6"W., following the shoreline northward to the northwest point at
(665) 27°39'46"N., 80°22'25.9"W., thence due east to a point on Orchid Island at approximately
(666) 27°39'46"N., 80°22'16.2"W., thence southerly along the shoreline of Orchid Island to
(667) 27°39'32.5"N., 80°22'13.4"W., thence due west to the point of beginning.
(668) (b) Area B. Beginning at a point located at the entrance channel marker No. 2 at
(669) 27°39'12"N., 80°22'17.3"W., thence northeasterly to channel marker No. 4 at
(670) 27°39'21"N., 80°22'15.8"W., thence due east to Orchid Island at approximately
(671) 27°39'21"N., 80°22'11.8"W., thence southerly along the western shoreline of Orchid Is. to
(672) 27°39'12"N., 80°22'15.6"W., thence due west to the point of beginning.
(673) (c) Vessels shall be so anchored so that no part of the vessel obstructs the turning basin or channels adjacent to the special anchorage areas.

### §110.73c. Okeechobee Waterway, St. Lucie River, Stuart, FL.

(674) The following is a special anchorage area: Beginning on the Okeechobee Intracoastal Waterway between mile marker 7 and 8 on the St. Lucie River, bounded by a line beginning at
(675) 27°12'06.583"N., 80°15'33.447"W.; thence to
(676) 27°12'07.811"N., 80°15'38.861"W.; thence to
(677) 27°12'04.584"N., 80°15'41.437"W.; thence to
(678) 27°11'49.005"N., 80°15'44.796"W.; thence to
(679) 27°11'47.99"N., 80°15'44.78"W; thence to
(680) 27°11'42.51"N., 80°15'49.36"W; thence to
(681) 27°11'41.40"N., 80°15'47.70"W.; thence to
(682) 27°11'40.44"N., 80°15'44.64"W.; thence to
(683) 27°11'43.49"N., 80°15'40.74"W.; thence to
(684) 27°11'46.82"N., 80°15'37.9647"W.; thence to
(685) 27°11'47.881"N., 80°15'38.271"W.; thence back to the original point. All coordinates reference Datum NAD:83.

## Subpart B–Anchorage Grounds

### §110.170 Lockwoods Folly Inlet, N.C.

(686) (a) Explosives Anchorage. Beginning at a point southeast of Shallotte Inlet at
(687) 33°52'31"N., 78°18'49"W.; thence south to
(688) 33°51'31"N., 78°18'42"W.; thence east to
(689) 33°51'51"N., 78°14'35"W.; thence north to

(690) 33°52'52"N., 78°14'40"W.; thence west to the point of beginning.

(691) (b) General regulations. (1) This anchorage is reserved for the exclusive use of vessels carrying explosives.

(692) (2) Vessels in this anchorage shall not anchor closer than 1,500 yards to one another. This provision is not intended to prohibit barges or lighters from lying alongside vessels for transfer of cargo.

(693) (3) The maximum quantity of explosives aboard any vessel that may be in this anchorage is 8,000 tons.

(694) (4) Nothing in this section shall be construed as relieving the owner, master, or person in charge of any vessel from the penalties of the law for obstructing navigation or for not complying with the navigation laws in regard to lights, fog signals, etc.

**§110.173 Port of Charleston, S.C.**

(695) (a) The anchorage grounds. (1) Commercial Anchorage A. This anchorage is located adjacent to the western edge of Folly Island Channel and southwest of Rebellion Reach and is bounded by the following coordinates:

(696) 32°45'34"N., 79°52'12"W.; to

(697) 32°46'17"N., 79°53'21"W.; to

(698) 32°45'51"N., 79°53'23"W.; to

(699) 32°45'34"N., 79°52'55"W.; thence back to

(700) 32°45'34"N., 79°52'12"W.

(701) (2) Commercial Anchorage B. This anchorage is located adjacent to the south side of South Channel and bounded by the following coordinates:

(702) 32°45'28"N., 79°53'40"W.; to

(703) 32°45'28"N., 79°54'46"W.; to

(704) 32°45'19"N., 79°54'46"W.; to

(705) 32°45'12"N., 79°54'06"W.; to

(706) 32°45'16"N., 79°53'40"W.; thence back to

(707) 32°45'28"N., 79°53'40"W.

(708) (3) Commercial Anchorage C. This anchorage is located 1,800 yards, 118° true from St. Michaels Church Spire and has a diameter of 500 yards. Vessels using this anchorage must anchor in the center.

(709) (4) Commercial Anchorage D. This anchorage is located **051°30'** true, 1,375 yards from St. Michaels Church Spire and has a diameter of 1,400 feet. The use of this anchorage is limited to loaded vessels for a period of not more than 24 hours.

(710) (b) The regulations (1) Except in cases of great emergency, no vessel shall be anchored in the main ship channels as defined by broken lines marking their boundaries on NOAA Chart 11524. Vessels must be anchored in such a way as not to interfere with the free navigation of channels in the port, including Cooper, Ashley, Wando Rivers, and Town Creek, nor to obstruct the approach to any pier or entrance to any slip, nor to impede the movement of any vessel or craft.

(711) (2) Vessels using the anchorages opposite the eastern waterfront of Charleston shall place their anchors as near as possible in the center of the anchorage. Vessels not using a designated commercial anchorage shall not place their anchors within the main ship channels, nor shall be so anchored as to swing within 400 feet of any wharf or pier on the eastern waterfront of Charleston. Vessels may be so anchored as to swing into the main ship channels only if they are so placed with reference to the customary winds, tides, and currents of the harbor, as to swing only during slack water, and that during this period there shall remain in the waters adjacent to the channel an area of sufficient depth as to permit the safe passage of loaded vessels.

(712) (3) No vessel may anchor within the designated anchorages for more than 72 hours without the prior approval of the Captain of the Port.

(713) (4) No vessel may anchor unless it maintains a bridge watch, guards and answers Channel 16 FM, and maintains an accurate position plot.

(714) (5) If any anchored vessel is so close to another that a collision is probable, each vessel must communicate with the other vessel and the Captain of the Port on Channel 16 FM and shall act to eliminate the close proximity situation.

(715) (6) No vessel may anchor unless it maintains the capability to get underway within 4 hours.

(716) (7) No vessel may anchor in a "dead ship" status (propulsion or control unavailable for normal operations) without the prior approval of the Captain of the Port.

(717) (8) Dragging of anchors in or across main ship channels and cable areas is prohibited.

(718) (9) Vessels which, through force of great emergency, are anchored contrary to the foregoing regulations in this section shall be shifted to new berths in accordance with such regulations at the earliest opportunity.

(719) (10) A vessel, upon notification from the Captain of the Port to shift its position in anchorage grounds must get underway at once or signal for a tug, and must change position as directed with reasonable promptness.

(720) (11) No vessel may conduct lightering operations in an anchorage without permission from the Captain of the Port.

(721) (12) When the use of an anchorage is required by naval vessels, the vessels anchored therein shall move when the Captain of the Port directs them.

(722) (13) Nothing in this section shall be construed as relieving the owner or person in charge of any vessel from the penalties of law for obstructing navigation, or for obstructing or interfering with range lights, or for not complying with the navigation laws in regard to lights, fog signals, etc.

**§110.179 Skidaway River, Isle of Hope, Ga.**

(723) (a) The anchorage ground. An area in Skidaway River beginning at a point on the mean low water line 400 feet south of Brady Boat Works, thence 076°30', 300 feet to a buoy; thence 152°30', 900 feet to a buoy;

thence 251°00', 450 feet to the mean low water line at Wymberly Yacht Club dock.

(724) (b) The regulations. (1) Except in cases of great emergency, no vessels shall anchor in Skidaway River between the north end of Barbee's dock and southward to Day Marker 48 except in the anchorage area hereby defined and established: Provided, however, that vessels may moor to any lawfully constructed wharf.

(725) (2) Except in cases of great emergency, no vessel shall be anchored where it can swing within 50 feet of any lawfully constructed wharf or within 50 feet of the mean low water line, nor shall any vessel be so anchored that any portion of the hull or rigging shall at any time extend outside the boundary of the anchorage area.

(726) (3) Any vessel anchoring under circumstances of great emergency outside the anchorage area should be placed in such a position as not to interfere with the free navigation of the channel nor obstruct the approach to any lawfully constructed wharf nor impede the movement of any boat, and shall move away immediately after the emergency ceases or upon notification of the District Commander.

(727) (4) No vessels with an overall length greater than 65 feet will use the anchorage area except in cases of great emergency.

(728) (5) Vessels operating within the anchorage area will not exceed a speed of five (5) miles per hour.

**§110.182 Atlantic Ocean off Fort George Inlet, near Mayport, Fla.**

(729) (a) The Anchorage areas–(1) Anchorages for aircraft carriers and other deep draft vessels. Four circular areas each with a radius of 600 yards and with their centers located at:

(730) "A"–30°25'35"N., 81°21'23"W.;

(731) "B"–30°26'13"N., 81°21'13"W.;

(732) "C"–30°26'19"N., 81°20'27"W.;

(733) "D"–30°26'55"N., 81°20'47"W.

(734) (2) Anchorages for destroyers and other ships of similar size. Six circular areas each with a radius of 300 yards and with their centers located at:

(735) "1"–30°24'38"N., 81°21'57"W.;

(736) "2"–30°24'57"N., 81°21'58"W.;

(737) "3"–30°24'56"N., 81°21'38"W.;

(738) "4"–30°25'13"N., 81°22'05"W.;

(739) "5"–30°25'13"N., 81°21'43"W;

(740) "6"–30°25'07"N., 81°21'24"W.

(741) (3) Explosives anchorage. The circular area "A" described in paragraph (a) (1) of this section is also designated as an explosives anchorage for use during periods when ammunition must be handled outside the limits of the U.S. Naval Station, Mayport, Fla.

(742) (b) The regulations for all designated areas. (1) Usage of these areas by naval vessels shall predominate only when necessary for military requirements; at such times other vessels shall remain clear of the areas.

(743) (2) Prudent assignment of the anchorage areas shall be made by the Commanding Officer, U.S. Naval Station, Mayport, Fla.

(744) (c) Additional regulations for Explosives Anchorage Area "A." (1) When occupied by a vessel handling explosives, no other vessel may enter the area unless authorized by the enforcing agency.

(745) (2) Only one vessel handling explosives may anchor in the area at one time. A patrol craft shall be utilized to assure that other vessels remain clear when explosives are exposed or being transferred to and from the anchorage.

(746) (3) No more than 500,000 pounds net high explosives or equivalent may be exposed in the area at any one time.

(747) (d) The regulations in this section shall be enforced by the Commanding Officer, U.S. Naval Station, Mayport, Fla., or other agencies that he may designate.

**§110.183 St. Johns River, Florida.**

(748) (a) The anchorage grounds–

(749) (1) Anchorage A. (Upper Anchorage) The Anchorage is established within the following coordinates, the area enclosed by a line starting at the south shore westerly of the entrance to Miller Creek at

(750) 30°18'43.8"N., 81°38'15.0"W.; thence to

(751) 30°18'52.8"N., 81°38'15.0"W.; thence to

(752) 30°18'47.6"N., 81°37'47.6"W.; thence to

(753) 30°18'55.0"N., 81°37'29.0"W.; thence to

(754) 30°19'06.0"N., 81°37'27.0"W.; thence to

(755) 30°19'06.0"N., 81°37'02.0"W.; thence to

(756) 30°19'01.2"N., 81°37'02.0"W.; thence returning to the point of beginning.

(757) (2) Anchorage B. (Lower Anchorage) The Anchorage is established within the following coordinates, the area enclosed by a line starting at a point on the eastern shore of the river at Floral Bluff at

(758) 30°21'00.0"N., 81°36'41.0"W.; thence to

(759) 30°20'00.0"N., 81°37'03.0"W.; thence to

(760) 30°21'00.0"N., 81°37'06.0"W.; thence to

(761) 30°21'50.0"N., 81°36'56.0"W.; thence to

(762) 30°21'54.0"N., 81°36'48.0"W.; thence to returning to the point of beginning.

(763) (b) The regulations.

(764) (1) Except in cases of emergency, only vessels meeting the conditions and restrictions of this paragraph will be authorized by the Captain of the Port to anchor in the St. Johns River, as depicted on NOAA chart 11491, between the entrance buoy (STJ) and the Main Street Bridge (in position 30°19'20"N., 81°39'32"W). Vessels unable to meet any of the following conditions and restrictions must obtain specific authorization from the Captain of the Port prior to anchoring in Anchorage A or B.

(765) (2) All vessels intending to enter and anchor in Anchorage A or B shall notify the Captain of the Port prior to entering.

(766) (3) Anchorages A and B are temporary anchorages. Additionally, Anchorage B is used as a turning basin. Vessels may not anchor for more than 24 hours in either anchorage without specific written authorization from the Captain of the Port.

(767) (4) All vessels at anchor must maintain a watch on VHF-FM channels 13 and 16 by a person fluent in English, and shall make a security broadcast on channel 13 upon anchoring and every 4 hours thereafter.

(768) (5) Anchorage A is restricted to vessels less than 250 feet in length.

(769) (6) Anchorage B is restricted to vessels with a draft of 24 feet or less, regardless of length.

(770) (7) Any vessel transferring petroleum products within Anchorage B shall have a pilot or Docking Master aboard, and employ sufficient assist tugs to assure the safety of the vessel at anchor and any vessels transiting the area.

(771) (8) Any vessel over 300 feet in length within Anchorage B shall have a Pilot or Docking Master aboard, and employ sufficient assist tugs to assure the safety of the vessel at anchor and any vessels transiting the area.

### §110.185 Atlantic Ocean, off the Port of Palm Beach, FL

(772) (a) The anchorage grounds. (1) Anchorage A. The waters lying within an area bounded by a line beginning at

(773) 26°50'00"N., 80°01'12"W.; thence westerly to

(774) 26°50'00"N., 80°01'30"W.; thence southerly to

(775) 26°47'30"N., 80°01'30"W.; thence easterly to

(776) 26°47'30"N., 80°01'12"W.; and thence northerly to the point of beginning.

(777) (2) Anchorage B. The waters lying within an area bounded by a line beginning at

(778) 26°45'06"N., 80°01'12"W.; thence westerly to

(779) 26°45'06"N., 80°01'42"W.; thence southerly to

(780) 26°43'48"N., 80°01'42"W.; thence easterly to

(781) 26°43'48"N., 80°01'12"W.; and thence northerly to the point of beginning.

(782) (b) The regulations. (1) Vessels in the Atlantic Ocean near Lake Worth Inlet awaiting berthing space at the Port of Palm Beach, shall only anchor within the anchorage areas hereby defined and established, except in cases of great emergency.

(783) (2) Vessels anchoring under circumstances of great emergency outside the anchorage areas shall be shifted to new positions within the anchorage areas immediately after the emergency ceases.

### §110.186 Port Everglades, Florida.

(784) (a) The anchorage grounds. The anchorage grounds, the center of which is located approximately two and one half miles northeast of the entrance of Port Everglades, is an area bounded by a line connecting points with the following North American Datum 83 coordinates:

(785) 26°08'26.93"N., 080°04'28.24"W.

(786) 26°08'08.56"N., 080°04'16.15"W.

(787) 26°07'56.00"N., 080°04'17.48"W.

(788) 26°07'56.00"N., 080°02'42.62"W.

(789) 26°07'19.50"N., 080°02'53.15"W.

(790) 26°07'19.50"N., 080°04'28.80"W.

(791) 26°06'35.16"N., 080°04'28.80"W.

(792) 26°06'35.16"N., 080°04'38.69"W.

(793) 26°08'26.93"N., 080°04'28.24"W

(794) (b) The regulations. (1) Commercial vessels in the Atlantic Ocean in the vicinity of Port Everglades shall anchor only within the anchorage area hereby defined and established, except in cases of emergency.

(795) (2) Prior to entering the anchorage area, all vessels shall notify the Coast Guard Captain of the Port, via the Port Everglades Harbormaster, on VHF-FM Channel 14.

(796) (3) All vessels within the designated anchorage area shall maintain a 24-hour bridge watch by a licensed or credentialed deck officer proficient in English, monitoring VHF-FM channel 16. This individual shall confirm that the ship's crew performs frequent checks of the vessel's position to ensure the vessel is not dragging anchor.

(797) (4) Vessels may anchor anywhere within the designated anchorage area provided that: such anchoring does not interfere with the operations of any other vessels currently at anchorage; and all anchor and chain or cable is positioned in such a manner to preclude dragging over reefs.

(798) (5) No vessel may anchor in a “dead ship” status (i.e. propulsion or control unavailable for normal operations) without the prior approval of the Captain of the Port. Vessels experiencing casualties such as a main propulsion, main steering or anchoring equipment malfunction or which are planning to perform main propulsion engine repairs or maintenance, shall immediately notify the Coast Guard Captain of the Port via Coast Guard Sector Miami on VHF-FM Channel 16.

(799) (6) No vessel may anchor within the designated anchorage for more than 72 hours without the prior approval of the Captain of the Port. To obtain this approval, contact the Coast Guard Captain of the Port, via the Port Everglades Harbor Master, on VHF-FM Channel 14.

(800) (7) The Coast Guard Captain of the Port may close the anchorage area and direct vessels to depart the anchorage during periods of adverse weather or at other times as deemed necessary in the interest of port safety or security.

(801) (8) Commercial vessels anchoring under emergency circumstances outside the anchorage area shall shift to new positions within the anchorage area immediately after the emergency ceases.

(802) (9) Whenever the maritime or commercial interests of the United States so require, the Captain of the Port, U.S. Coast Guard, Miami, Florida, may direct relocation of any vessel anchored within the anchorage area. Once directed, such vessel must get underway at once or signal for a tug, and must change position as directed.

**§110.188 Atlantic Ocean off Miami and Miami Beach, Fla.**

(803) (a) The anchorage grounds. The area to the eastward of a line bearing **012°** through a point X, which is 1½ nautical miles due east of the intersection of the Miami Beach shoreline with the north jetty; to the northward of a line bearing **102°** and intersecting the **012°** line at a point A, one-half nautical mile north of the said point X; and to the southward of a line bearing **102°** and intersecting the **012°** line at a point B, 2½ nautical miles north of the said point X. The northern and southern extremities of the **012°** line are marked by spar buoys. The entire anchorage area lies north of the entrance channel to Miami Harbor.

(804) (b) The rules and regulations. (1) Except in cases of great emergency, no vessel shall be anchored in the Atlantic Ocean in the vicinity of the entrances to the approach channels leading to the cities of Miami Beach and Miami, Fla., outside of the anchorage area hereby defined and established–that is, they shall not anchor shoreward of the line first named nor southward of the second nor northward of the third line–but may anchor as far to the eastward as may be desired.

(805) (2) Any vessel anchoring under circumstances of great emergency outside of the anchorage area shall be shifted to new berths within the area immediately after the emergency ceases.

(806) (3) All vessels shall lie at anchor with as short a cable as conditions will permit.

(807) (4) A vessel upon being notified to move into the anchorage limits or to shift its position on the anchorage ground must get under way at once or signal for a tug, and must change position as directed with reasonable promptness.

(808) (5) Whenever the maritime or commercial interests of the United States so require, the Captain of the Port, U.S. Coast Guard, Miami, Fla., is hereby empowered to shift the position of any vessel anchored on the anchorage ground or outside thereof, or of any vessel moored or anchored so as to impede or obstruct vessel movements or obstruct or interfere with range lights.

(809) (6) Vessels carrying explosives shall be anchored only under a written permit issued by the Captain of the Port and at such point as he may direct.

(810) (7) Vessels carrying explosives shall be at all times in charge of a competent person, and must display by day a red flag, of not less than 16 square feet, at the masthead, or not less than 10 feet above the upper deck if the vessel has no mast; at night a red light shall be displayed in the positions specified for the red flag.

(811) (8) Nothing in this paragraph shall be construed as relieving the owner or person in charge of any vessel from the penalties of the law for obstructing navigation, or for obstructing or interfering with range lights, or for not complying with the navigation laws in regard to lights, fog signals, or other aids to navigation, or for otherwise violating law.

(812) (9) All vessels desiring to use the Anchorage must notify the Coast Guard Captain of the Port, via the Biscayne Bay Pilots on VHF-FM channel 12 or 16.

(813) (10) All vessels anchored within the anchorage area shall maintain a 24-hour bridge watch by an English speaking licensed or credentialed deck officer monitoring VHF-FM Channel 16. This individual shall perform frequent checks of the vessels's position to ensure the vessel is not dragging anchor.

(814) (11) Vessels experiencing casualties such as a main propulsion, main steering or anchoring equipment malfunction or which are planning to perform main propulsion engine repairs or maintenance, shall immediately notify the Coast Guard Captain of the Port via the Coast Guard Sector Miami on VHF-FM channel 16.

(815) (12) The Coast Guard Captain of the Port may close the anchorage area and direct vessels to depart the anchorage during periods of adverse weather or at other times as deemed necessary in the interest of port safety.

**§110.189a Key West Harbor, Key West, Fla.; naval explosives anchorage area.**

(816) (a) The anchorage ground. A circular area with its center at latitude 24°30'50.6", longitude 81°50'31.6" with a radius of 300 yards, for use for ammunition exceeding the prescribed limits for pier-side handling.

(817) (b) The regulations. (1) When occupied by a vessel handling explosives, no other vessel may enter the area unless authorized by the enforcing agency.

(818) (2) Only one vessel handling explosives may anchor in the area at one time.

(819) (3) No more than 300,000 pounds net of high explosives or equivalent may be handled in the area at any one time.

(820) (4) The regulations in this section shall be enforced by the Commander, U.S. Naval Base, Key West, Fla., and any other agencies he may designate.

## Part 117–Drawbridge Operation Regulations

## Subpart A–General Requirements

**§117.1 Purpose.**

(821) (a) This part prescribes the general and special drawbridge operating regulations that apply to the drawbridges across the navigable waters of the United States and its territories. The authority to regulate drawbridges across the navigable waters of the United States is vested in the Secretary of Homeland Security.

(822) (b) Subpart A contains the general operation requirements that apply to all drawbridges.

(823) (c) Subpart B contains specific requirements for operation of individual drawbridges. These requirements are in addition to or vary from the general requirements in Subpart A. Specific sections in subpart

B that vary from a general requirement in Subpart A supersede the general requirement. All other general requirements in Subpart A, that are not at variance, apply to the drawbridges and removable span bridges listed in Subpart B.

**§117.3 [Removed].**

**§117.4 Definitions.**

(824) The following definitions apply to this part:

(825) Appurtenance means an attachment or accessory extending beyond the hull or superstructure that is not an integral part of the vessel and is not needed for a vessel's piloting, propelling, controlling, or collision avoidance capabilities.

(826) Automated drawbridge means a drawbridge that is operated by an automated mechanism, not a drawtender. An automated drawbridge is normally kept in the open to navigation position and closes when the mechanism is activated.

(827) Deviation means a District Commander's action authorizing a drawbridge owner to temporarily not comply with the drawbridge opening requirements in this part.

(828) Drawbridge means a bridge with an operational span that is intended to be opened for the passage of waterway traffic.

(829) Drawspan means the operational span of a drawbridge.

(830) Lowerable means a non-structural vessel appurtenance that is or can be made flexible, hinged, collapsible, or telescopic so that it can be mechanically or manually lowered.

(831) Nonstructural means that the item is not rigidly fixed to the vessel and can be relocated or altered.

(832) Not essential to navigation means that a nonstructural vessel appurtenance, when in the lowered position, would not adversely affect the vessel's piloting, propulsion, control, or collision-avoidance capabilities.

(833) Public vessel means a vessel that is owned and operated by the United States Government and is not engaged in commercial service, as defined in 46 U.S.C. 2101.

(834) Remotely operated drawbridge means a drawbridge that is operated by remote control from a location away from the drawbridge.

(835) Removable span bridge means a bridge that requires the complete removal of a span by means other than machinery installed on the bridge to open the bridge to navigation.

(836) Untended means that there is no drawtender at the drawbridge.

**§117.5 When the drawbridge must open.**

(837) Except as otherwise authorized or required by this part, drawbridges must open promptly and fully for the passage of vessels when a request or signal to open is given in accordance with this subpart.

**§117.7 General requirements of drawbridge owners.**

(838) Except for drawbridges that have been authorized, before January 3, 2007, to remain closed to navigation or as otherwise specified in subpart B, drawbridge owners must:

(839) (a) Provide the necessary drawtender(s) for the safe and prompt opening of the drawbridge.

(840) (b) Maintain the working machinery of the drawbridge in good operating condition.

(841) (c) Cycle the drawspan(s) periodically to ensure operation of the drawbridge.

(842) (d) Ensure that the drawbridge operates in accordance with the requirements of this part.

(843) (e) Any drawbridge allowed to remain closed to navigation prior to January 3, 2007, when necessary, must be returned to operable condition within the designated time set forth by the District Commander and will become subject to the requirements of this part.

**§117.8 Permanent changes to drawbridge operation.**

(844) (a) Anyone may submit a written request to the District Commander for a permanent change to a drawbridge operating requirement. The request must include documentation supporting or justifying the requested change.

(845) (b) If after evaluating the request, the District Commander determines that the requested change is not needed, he or she will respond to the request in writing and provide the reasons for denial of the requested change.

(846) (c) If the District Commander decides that a change may be needed, he or she will begin a rulemaking to implement the change.

**§117.9 Delaying opening of a draw.**

(847) No person shall unreasonably delay the opening of a draw after the signals required by §117.15 have been given.

**Note**

(848) Trains are usually controlled by the block method. That is, the track is divided into blocks or segments of a mile or more in length. When a train is in a block with a drawbridge, the draw may not be able to open until the train has passed out of the block and the yardmaster or other manager has “unlocked” the drawbridge controls. The maximum time permitted for delay is defined in Subpart B for each affected bridge. Land and water traffic should pass over or through the draw as soon as possible in order to prevent unnecessary delays in the opening and closure of the draw.

**§117.11 Unnecessary opening of the draw.**

(849) No vessel owner or operator shall -

(850) (a) Signal a drawbridge to open if the vertical clearance is sufficient to allow the vessel, after all lowerable nonstructural vessel appurtenances that are not essential to navigation have been lowered, to safely pass under the drawbridge in the closed position; or

(851) (b) Signal a drawbridge to open for any purpose other than to pass through the drawbridge opening.

**§117.15 Signals.**

(852) (a) General. (1) The operator of each vessel requesting a drawbridge to open shall signal the drawtender and the drawtender shall acknowledge that signal. The signal shall be repeated until acknowledged in some manner by the drawtender before proceeding.

(853) (2) The signals used to request the opening of the draw and to acknowledge that request shall be sound signals, visual signals, or radiotelephone communications described in this subpart.

(854) (3) Any of the means of signaling described in this subpart sufficient to alert the party being signaled may be used.

(855) (b) Sound signals. (1) Sound signals shall be made by whistle, horn, megaphone, hailer, or other device capable of producing the described signals loud enough to be heard by the drawtender.

(856) (2) As used in this section, "prolonged blast" means a blast of four to six seconds duration and "short blast" means a blast of approximately one second duration.

(857) (3) The sound signal to request the opening of a draw is one prolonged blast followed by one short blast sounded not more than three seconds after the prolonged blast. For vessels required to be passed through a draw during a scheduled closure period, the sound signal to request the opening of the draw during that period is five short blasts sounded in rapid succession.

(858) (4) When the draw can be opened immediately, the sound signal to acknowledge a request to open the draw is one prolonged blast followed by one short blast sounded not more than 30 seconds after the requesting signal.

(859) (5) When the draw cannot be opened immediately, or is open and shall be closed promptly, the sound signal to acknowledge a request to open the draw is five short blasts sounded in rapid succession not more than 30 seconds after the vessel's opening signal. The signal shall be repeated until acknowledged in some manner by the requesting vessel.

(860) (c) Visual signals. (1) The visual signal to request the opening of a draw is–

(861) (i) A white flag raised and lowered vertically; or

(862) (ii) A white, amber, or green light raised and lowered vertically.

(863) (2) When the draw can be opened immediately, the visual signal to acknowledge a request to open the draw, given not more than 30 seconds after the vessel's opening signal, is–

(864) (i) A white flag raised and lowered vertically;

(865) (ii) A white, amber, or green light raised and lowered vertically, or

(866) (iii) A fixed or flashing white, amber, or green light or lights.

(867) (3) When the draw cannot be opened immediately, or is open and must be closed promptly, the visual signal to acknowledge a request to open the draw is –

(868) (i) A red flag or red light swung back and forth horizontally in full sight of the vessel given not more than 30 seconds after the vessel's opening signal; or

(869) (ii) A fixed or flashing red light or lights given not more than 30 seconds after the vessel's opening signal.

(870) (4) The acknowledging signal when the draw cannot open immediately or is open and must be closed promptly shall be repeated until acknowledged in some manner by the requesting vessel.

(871) (d) Radiotelephone communications. (1) Radiotelephones may be used to communicate the same information provided by sound and visual signals.

(872) (2) The vessel and the drawtender shall monitor the frequency used until the vessel has cleared the draw.

(873) (3) When radiotelephone contact cannot be initiated or maintained, sound or visual signals under this section shall be used.

**§117.17 Signalling for contiguous drawbridges.**

(874) When a vessel must pass two or more drawbridges close together, the opening signal is given for the first bridge. After acknowledgment from the first bridge that it will promptly open, the opening signal is given for the second bridge, and so on until all bridges that the vessel must pass have been given the opening signal and have acknowledged that they will open promptly.

**§117.19 Signalling when two or more vessels are approaching a drawbridge.**

(875) When two or more vessels are approaching the same drawbridge at the same time, or nearly the same time, whether from the same or opposite directions, each vessel shall signal independently for the opening of the draw and the drawtender shall reply in turn to the signal of each vessel. The drawtender need not reply to signals by vessels accumulated at the bridge for passage during a scheduled open period.

**§117.21 Signalling for an opened drawbridge.**

(876) When a vessel approaches a drawbridge with the draw in the open position, the vessel shall give the opening signal. If no acknowledgment is received within 30 seconds, the vessel may proceed, with caution, through the open draw.

**§117.23 Installation of radiotelephones.**

(877) (a) When the District Commander deems it necessary for reasons of safety of navigation, the District Commander may require the installation and operation of a radiotelephone on or near a drawbridge.

(878) (b) The District Commander gives written notice of the proposed requirement to the bridge owner.

(879) (c) All comments the owner wishes to submit shall be submitted to the District Commander within 30 days of receipt of the notice under paragraph (b) of this section.

(880) (d) If, upon consideration of the comments received, the District Commander determines that a radiotelephone is necessary, the District Commander notifies the bridge owner that a radiotelephone shall be installed and gives a reasonable time, not to exceed six months, to install the radiotelephone and commence operation.

**§117.24 Radiotelephone installation identification.**

(881) (a) The Coast Guard authorizes, and the District Commander may require the installation of a sign on drawbridges, on the upstream and downstream sides, indicating that the bridge is equipped with and operates a VHF radiotelephone in accordance with §117.23.

(882) (b) The sign shall give notice of the radiotelephone and its calling and working channels-

(883) (1) In plain language; or

(884) (2) By a sign consisting of the outline of a telephone handset with the long axis placed horizontally and a vertical three-legged lightning slash superimposed over the handset. The slash shall be as long vertically as the handset is wide horizontally and normally not less than 27 inches and no more than 36 inches long. The preferred calling channel should be shown in the lower left quadrant and the preferred working channel should be shown in the lower right quadrant.

**§117.31 Drawbridge operations for emergency vehicles and emergency vessels.**

(885) (a) Upon receiving notification that an emergency vehicle is responding to an emergency situation, a drawtender must make all reasonable efforts to have the drawspan closed at the time the emergency vehicle arrives.

(886) (b) When a drawtender receives notice, or a proper signal as provided in §117.15 of this part, the drawtender shall take all reasonable measures to have the draw opened, regardless of the operating schedule of the draw, for passage of the following, provided this opening does not conflict with local emergency management procedures which have been approved by the cognizant Coast Guard Captain of the Port:

(887) (1) Federal, State, and local government vessels used for public safety;

(888) (2) vessels in distress where a delay would endanger life or property;

(889) (3) commercial vessels engaged in rescue or emergency salvage operations; and

(890) (4) vessels seeking shelter from severe weather.

**§117.33 Closure of draw for natural disasters or civil disorders.**

(891) Drawbridges need not open for the passage of vessels during periods of natural disasters or civil disorders declared by the appropriate authorities unless otherwise provided for in Subpart B or directed to do so by the District Commander.

**§117.35 Temporary change to a drawbridge operating schedule.**

(892) (a) For any temporary change to the operating schedule of a drawbridge, lasting less than or equal to 180 days, the District Commander may issue a deviation approval letter to the bridge owner and publish a "Notice of deviation from drawbridge regulation" in the **Federal Register**.

(893) (b) If the time period for a temporary change to the operating schedule of a drawbridge will be greater then 180 days, the District Commander will follow appropriate rulemaking procedures and publish a temporary rule in the **Federal Register** prior to the start of the action.

(894) (c) Request for change. (1) To temporarily change the drawbridge-operating requirements the bridge owner must submit a written request to the District Commander for approval of the change.

(895) (2) The request must describe the reason for the closure and the dates and times scheduled for the start and end of the change.

(896) (3) Requests should be submitted as early as possible, preferably 90 days before the start of the action. District Commanders have discretion to accept requests submitted less than 90 days before a needed change if those requests can be processed before the date of the needed change.

(897) (d) Determination. The District Commander's determination to allow the schedule change is normally forwarded to the bridge owner within ten working days after receipt of the request. If the request is denied, the reasons for the denial will be set out in the District Commander's decision letter.

(898) (e) The drawbridge must return to its regular operating schedule immediately at the end of the designated time period.

(899) (f) If the authorized closure period for an event is broken into separate time periods on the same day or on consecutive days, the drawbridge must provide openings for navigation between the authorized closures.

(900) (g) The District Commander will also announce the change to the operating schedule in the Local Notice to Mariners and other appropriate local media.

**§117.36 Closure of drawbridge for emergency repair.**

(901) (a) When a drawbridge unexpectedly becomes inoperable, or should be immediately rendered inoperable because of mechanical failure or structural defect, the drawbridge owner must notify the District Commander

of the closure without delay and give the reason for the emergency closure of the drawbridge and an estimated time when the drawbridge will be returned to operating condition.

(902) (b) The District Commander will notify mariners about the drawbridge status through Broadcast Notices to Mariners, Local Notice to Mariners and any other appropriate local media.

(903) (c) Repair work under this section must be performed with all due speed in order to return the drawbridge to operation as soon as possible.

**§117.37 [Removed].**

**§117.39 Authorized closure of drawbridge due to infrequent requests for openings.**

(904) (a) When there have been no requests for drawbridge openings for at least two years, a bridge owner may request in writing that the District Commander authorize the drawbridge to remain closed to navigation and to be untended.

(905) (b) The District Commander may:

(906) (1) Authorize the closure of the drawbridge;

(907) (2) Set out any conditions in addition to the requirement in paragraph (d): and

(908) (3) Revoke an authorization and order the drawbridge returned to operation when necessary.

(909) (c) All drawbridges authorized to remain closed to navigation, under this section, must be maintained in operable condition.

(910) (d) Authorization under this section does not:

(911) (1) Authorize physical changes to the drawbridge structure, or

(912) (2) Authorize removal of the operating machinery.

(913) (e) Drawbridges authorized under this section to remain closed to navigation and to be untended are identified in subpart B of this part.

**§117.40 Advance notice for drawbridge opening.**

(914) (a) Upon written request by the owner of a drawbridge, the District Commander may authorize a drawbridge to operate under an advance notice for opening. The drawbridge tender, after receiving the advance notice, must open the drawbridge at the requested time and allow for a reasonable delay in arrival of the vessel giving the advance notice.

(915) (b) If the request is approved, a description of the advanced notice for the drawbridge will be added to subpart B of this part.

**§117.41 Maintaining drawbridges in the fully open position.**

(916) (a) Drawbridges permanently maintained in the fully open to navigation position may discontinue drawtender service as long as the drawbridge remains fully open to navigation. The drawbridge must remain in the fully open position until drawtender service is restored.

(917) (b) If a drawbridge is normally maintained in the fully open to navigation position, but closes to navigation for the passage of pedestrian, vehicular, rail, or other traffic, the drawbridge must be tended unless:

(918) (1) Special operating requirements are established in subpart B of this part for that drawbridge; or

(919) (2) The drawbridge is remotely operated or automated.

**§117.42 Remotely operated and automated drawbridges.**

(920) (a) Upon written request by the owner of a drawbridge, the District Commander may authorize a drawbridge to operate under an automated system or from a remote location.

(921) (b) If the request is approved, a description of the full operation of the remotely operated or automated drawbridge will be added to subpart B of this part.

**§117.43 [Removed].**

**§117.45 [Removed].**

**§117.47 Clearance gauges.**

(922) (a) Clearance gauges are required for drawbridges across navigable waters of the United States discharging into the Atlantic Ocean south of Delaware Bay (including the Lewes and Rehoboth Canal, DE) or into the Gulf of Mexico (including coastal waterways contiguous thereto and tributaries to such waterways and the Lower Atchafalaya River, LA), except the Mississippi River and its tributaries and outlets.

(923) (b) Except for provisions in this part which specify otherwise for particular drawbridges, clearance gauges shall be designed, installed, and maintained according to the provisions of 33 CFR 118.160 (not carried in this Coast Pilot).

**Note**

(924) Clearance gauge requirements, if any, for drawbridges other than those referred to in this section are listed in Subpart B under the appropriate bridge.

**§117.49 Process of violations.**

(925) (a) Complaints of alleged violations under this part are submitted to the District Commander of the Coast Guard District in which the drawbridge is located.

(926) (b) Penalties for violations under this part are assessed and collected under Subpart 1.07 of Part 1 of this chapter (not published in this Coast Pilot; see 33 CFR 1.07).

## Subpart B–Specific Requirements

### §117.51 General.

(927) The drawbridges in this subpart are listed by the state in which they are located and by the waterway they cross. Waterways are arranged alphabetically by state. The drawbridges listed under a waterway are generally arranged in order from the mouth of the waterway moving upstream. The drawbridges on the Atlantic Intracoastal Waterway are listed from north to south and on the Gulf Intracoastal Waterway from east to west.

### §117.53 [Removed].

### §117.55 Posting of requirements.

(928) (a) The owner of each drawbridge under this subpart, other than removable span bridges, must ensure that a sign summarizing the requirements in this subpart applicable to the drawbridge is posted both upstream and downstream of the drawbridge. The requirements to be posted need not include those in Subpart A or §§117.51 through 117.59 of this part.

(929) (b) The signs shall be of sufficient size and so located as to be easily read at any time from an approaching vessel.

(930) (c) If advance notice is required to open the draw, the signs shall also state the name, address, and telephone number of the person to be notified.

### §117.57 [Removed].

### §117.59 Special requirements due to hazards.

(931) For the duration of occurrences hazardous to safety or navigation, such as floods, freshets, and damage to the bridge or fender system, the District Commander may require the owner of an operational drawbridge listed in this subpart to have the bridge attended full time and open on signal.

### §117.261 Atlantic Intracoastal Waterway from St. Marys River to Key Largo.

(932) (a) General. Public vessels of the United States and tugs with tows mustl be passed through the drawspan of each drawbridge listed in this section at any time.

(933) (b) McCormick Bridge, mile 747.5 at Jacksonville Beach. The draw shall open on signal; except that, during April, May, October, and November, from 7 a.m. to 8:30 a.m. and 4:30 p.m. to 6 p.m. Monday through Friday except federal holidays, the draw need open only on the hour and half-hour. During April, May, October, and November, from 12 noon to 6 p.m. Saturdays, Sundays, and federal holidays, the draw need open only on the hour and half-hour.

(934) (c) [Reserved]

(935) (d) Bridge of Lions (SR A1A) bridge, mile 777.9 at St. Augustine. The draw shall open on signal; except that, from 7 a.m. to 6 p.m. the draw need open only on the hour and half-hour; however, the draw need not open at 8 a.m., 12 noon, and 5 p.m. Monday through Friday except federal holidays. From 7 a.m. to 6 p.m. on Saturdays, Sundays and federal holidays the draw need only open on the hour and half-hour.

(936) (e)–(f) [Reserved]

(937) (g) Memorial bridge, mile 830.6 at Daytona Beach. The draw shall open on signal; except that, from 7:45 a.m. to 8:45 a.m. and 4:45 p.m. to 5:45 p.m. Monday through Saturday except federal holidays, the draw need open only at 8:15 a.m. and 5:15 p.m.

(938) (h) Coronado Beach bridge (SR 44), mile 845 at New Smyrna Beach. The Coronado Beach bridge (SR 44), mile 845, shall open on signal, except that from 7 a.m. until 7 p.m., each day of the week, the draw need only open on the hour, twenty minutes past the hour and forty minutes past the hour.

(939) (i) [Reserved]

(940) (j) NASA Railroad bridge, mile 876.6 at Kennedy Space Center.

(941) (1) The draw is not constantly tended.

(942) (2) The draw is normally in the fully open position displaying flashing green lights to indicate that vessels may pass.

(943) (3) When a train approaches the bridge, it stops and the operator initiates a command to lower the bridge. The lights go to flashing red and the draw lowers and locks, providing scanning equipment reveals nothing under the draw. The draw remains down until a manual raise command is initiated, or will raise automatically 5 minutes after the intermediate track circuit is no longer occupied by a rail car.

(944) (4) After the train has cleared, the draw opens and the lights return to flashing green.

(945) (k) State Road 402, Max Brewer bridge, mile 878.9 at Titusville. The draw shall open on signal; except that, from 6 a.m. to 7:15 a.m. and 3:15 p.m. to 4:30 p.m., Monday through Friday, except federal holidays, the draw need not open.

(946) (l) John F. Kennedy Space Center bridge, mile 885 at Addison Point. The draw shall open on signal; except that from 6:30 a.m. to 8 a.m. and 3:30 p.m. to 5 p.m. Monday through Friday, except Federal holidays, the draw need not open.

(947) (m) [Reserved]

(948) (n) [Reserved]

(949) (o) Jensen Beach (SR 707a) bridge, mile 981.4 at Stuart. The draw shall open on signal; except that from December 1 through May 1, from 7 a.m. to 6 p.m., Monday through Friday, except federal holidays, the draw need open only on the hour and half-hour.

(950) (p) [Reserved]

(951) (q) Indiantown Road bridge, mile 1006.2. The draw shall open on the hour and half-hour.

(952) (r) Donald Ross bridge, mile 1009.3, at North Palm Beach. The draw shall open on the hour and half-hour.

(953) (s) PGA Boulevard bridge, mile 1211.6 at North Palm Beach. The draw shall open on the hour and on the half-hour.

(954) (t) Parker (US–1) bridge, mile 1013.7, at Riviera Beach. The draw shall open on the quarter and three-quarter hour.

(955) (u) Flagler Memorial (SR A1A) bridge, mile 1020.8, at Palm Beach. The draw shall open on the quarter and three-quarter hour.

(956) (v) Royal Park (SR 704) bridge, mile 1022.6, at Palm Beach. The draw shall open on the hour and half-hour.

(957) (w) Southern Boulevard (SR 700/80) bridge, mile 1024.7, at Palm Beach. The draw shall open on the quarter and three-quarter hour.

(958) (x) Ocean Avenue bridge, mile 1031.0 at Lantana. The draw shall open on the hour and half-hour.

(959) (y) Ocean Avenue bridge, mile 1035.0, at Boynton Beach. The draw shall open on the hour and half-hour.

(960) (z) [Reserved]

(961) (z-1) Atlantic Avenue (SR 806) bridge, mile 1039.6, at Delray Beach. The draw shall open on the quarter and three-quarter hour.

(962) (z-2) Linton Boulevard bridge, mile 1041.1, at Delray Beach. The draw shall open on the hour and half-hour.

(963) (z-3) Spanish River bridge, mile 1044.9, at Boca Raton. The draw shall open on the hour and half-hour.

(964) (aa) Palmetto Park bridge, mile 1047.5, at Boca Raton. The draw shall open on the hour and half-hour.

(965) (aa-1) Boca Club, Camino Real bridge, mile 1048.2, at Boca Raton. The draw shall open on the hour, twenty minutes past the hour and forty minutes past the hour.

(966) (bb) Broward County (1) Hillsboro Boulevard bridge (SR 810), mile 1050.0 at Deerfield Beach. The draw shall open on the hour and half-hour.

(967) (2) NE 14th Street bridge, mile 1055.0 at Pompano. The draw shall open on the quarter-hour and three-quarter hour.

(968) (3) Atlantic Boulevard (SR 814) bridge, mile 1056.0 at Pompano. The draw shall open on the hour and half-hour.

(969) (4) Commercial Boulevard (SR 870) bridge, mile 1059.0, at Lauderdale-by-the-Sea. The draw shall open on the hour and half-hour.

(970) (5) Oakland Park Boulevard bridge, mile 1060.5 at Fort Lauderdale. The draw shall open on the quarter-hour and three-quarter hour.

(971) (6) East Sunrise Boulevard (SR 838) bridge, mile 1062.6, at Fort Lauderdale. The draw shall open on the hour and half-hour. On the first weekend in May, the draw need not open from 4 p.m. to 6 p.m. on Saturday and Sunday, and, on the first Saturday in May, the draw need not open from 9:45 p.m. to 10:45 p.m.

(972) (7) East Las Olas bridge, mile 1064 at Fort Lauderdale. The draw shall open on the quarter-hour and three-quarter hour. On the first weekend in May, the draw need not open from 4 p.m. to 6 p.m. on Saturday and Sunday, and, on the first Saturday in May, the draw need not open from 9:45 p.m. to 10:45 p.m.

(973) (8) SE 17th Street (Brooks Memorial) bridge, mile 1065.9 at Fort Lauderdale. The draw shall open on the hour and half hour.

(974) (9) Dania Beach Boulevard bridge, mile 1069.4 at Dania Beach. The draw shall open on the hour and half-hour.

(975) (10) Sheridan Street bridge, mile 1070.5, at Fort Lauderdale. The draw shall open on the quarter-hour and three-quarter hour.

(976) (11) Hollywood Beach Boulevard (SR 820) bridge, mile 1072.2 at Hollywood. The draw shall open on the hour and half-hour.

(977) (12) Hallandale Beach Boulevard (SR 824) bridge, mile 1074.0 at Hallandale. The draw shall open on the quarter-hour and three-quarter hour.

(978) (cc)-(kk) [Reserved]

(979) (ll) N.E. 163rd Street (SR826) bridge, mile 1078.0 at Sunny Isles. The draw shall open on signal; except that, from 7 a.m. to 6 p.m. on Monday through Friday except federal holidays, and from 10 a.m. to 6 p.m. on Saturdays, Sundays, and federal holidays, the draw need open only on the quarter-hour and three-quarter-hour.

(980) (mm) Broad Causeway bridge, mile 1081.4 at Bay Harbor Islands. The draw shall open on signal; except that, from 8 a.m. to 6 p.m., the draw need open only on the quarter-hour and three-quarter-hour.

(981) (nn) [Reserved].

(982) (oo) [Reserved].

(983) (pp) [Reserved].

(984) (qq) Jewfish Creek, mile 1134, Key Largo. The draw shall open on signal; except that from 10 a.m. to sunset, Thursday through Sunday and federal holidays, the draw need open only on the hour and half-hour.

(985) (rr)-(ss) [Reserved].

**§117.263 Banana River.**

(986) (a) The draw of the Mathers (SR A-1-A) Bridge, mile 0.5 at Indian Harbor Beach, shall open on signal; except that, from 10 p.m. to 6 a.m. Monday through Friday except Federal holidays, the draw shall open on signal if at least two hours notice is given.

(987) (b) The draw of the NASA Causeway bridge, mile 27.6 at Cape Canaveral, shall open on signal if at least four hours notice is given to the NASA Security Office by telephone or in person.

**§117.269 Biscayne Bay.**

(988) The Venetian Causeway Bridge (East) shall open on signal, except that from 7 a.m. to 7 p.m., Monday through Friday, except Federal holidays, the bridge need only open on the hour and half-hour.

**§117.272 Boot Key Harbor.**

(989) The draw of the Boot Key Harbor drawbridge, mile 0.13, between Marathon and Boot Key, will open as necessary on the hour between the hours of 7 a.m. to 7

p.m. At all other times, the bridge will open following a one hour notification to the bridge tender by calling the posted cell phone number. The draw shall open on demand and as soon as practicable for the passage of tugs with tows, public vessels of the United States and vessels whereby a delay would endanger life or property.

**§117.273 Canaveral Barge Canal.**

(990) (a) The drawspan of the Christa McAuliffe Drawbridge, SR 3, mile 1.0, across the Canaveral Barge Canal need only open daily for vessel traffic on the hour and half-hour from 6 a.m. to 10 p.m.; except that from 6:15 a.m. to 8:15 a.m. and from 3:10 p.m. to 5:59 p.m., Monday through Friday, except Federal holidays, the drawspan need not open. From 10:01 p.m. to 5:59 a.m., everyday, the drawspan must open on signal if at least 3 hours notice is given to the drawtender. The drawspan must open as soon as possible for the passage of public vessels of the United States and tugs with tows.

(991) (b) The drawspan of the SR401 Drawbridge, mile 5.5 at Port Canaveral, must open on signal; except that, from 6:30 a.m. to 8 a.m. and 3:30 p.m. to 5:15 p.m. Monday through Friday except Federal holidays, the drawspan need not be opened for the passage of vessels. From 10 p.m. to 6 a.m., the drawspan must open on signal if at least three hours notice is given. The drawspan must open as soon as possible for the passage of public vessels of the United States and tugs with tows.

**§117.289 Hillsboro Inlet.**

(992) The drawspans of the SR A-1-A Drawbridge, mile 0.3 at Hillsboro Beach, must open on signal; except that, from 7 a.m. to 6 p.m., the drawspan need be opened only on the hour, quarter hour, half hour, and three quarter hour. Public vessels of the United States and tugs with tows must be passed at anytime.

**§117.295 Kissimmee River.**

(993) The draw of the DSX Railroad bridge, mile 37.0, near Fort Basinger, shall open if at least 96 hours notice is given.

**§117.299 Loxahatchee River.**

(994) The draw of the Florida East Coast Railway Bridge across the Loxahatchee River, mile 1.2 at Jupiter, operates as follows:

(995) (a) The bridge is not constantly tended.

(996) (b) The draw is normally in the fully open position, displaying flashing green lights to indicate that vessels may pass.

(997) (c) When a train approaches, the lights go to flashing red and a horn starts four blasts, pauses, and then continues four blasts. After an eight minute delay, the draw lowers and locks, providing the scanning equipment reveals nothing under the draw. The draw remains down for a period of eight minutes or while the approach track circuit is occupied.

(998) (d) After the train has cleared, the draw opens and the lights return to flashing green.

**§117.305 Miami River.**

(999) (a) General. Public vessels of the United States, tugs, tugs with tows, and vessels in a situation where a delay would endanger life or property shall, upon proper signal, be passed through the draw of each bridge listed in this section at any time.

(1000) (b) The draws of the S.W. First Street Bridge, mile 0.9, up to and including the N.W. 27th Avenue Bridge, mile 3.7 at Miami, shall open on signal; except that, from 7:35 a.m. to 8:59 a.m. and 4:45 p.m. to 5:59 p.m., Monday through Friday, except Federal holidays, the draws need not open for the passage of vessels.

(1001) (c) The draws of the Miami Avenue Bridge, mile 0.3, and the S.W. Second Avenue Bridge, mile 0.5, at Miami, shall open on signal; except that, from 7:35 a.m. to 8:59 a.m., 12:05 p.m. to 12:59 p.m. and 4:35 p.m. to 5:59 p.m., Monday through Friday, except Federal holidays, the draws need not open for the passage of vessels.

(1002) (d) The draw of the Brickell Avenue Bridge, mile 0.1, at Miami, shall open on signal; except that, from 7 a.m. to 7 p.m., Monday through Friday except Federal holidays, the draw need open only on the hour and half-hour. From 7:35 a.m. to 8:59 a.m., 12:05 p.m. to 12:59 p.m. and 4:35 p.m. to 5:59 p.m., Monday through Friday except Federal holidays, the draw need not open for the passage of vessels.

**§117.307 Miami River, North Fork.**

(1003) The draw of the FDOT Railroad Bridge, mile 5.3 at Miami, shall open on signal if at least 48-hour notice is given to CSX System Operating Headquarters 800-232-0144.

**§117.309 Nassau Sound.**

(1004) The draw of the Fernandina Port Authority (SR A-1-A) bridge, mile 0.4 between Amelia Island and Talbot Island, shall open on signal from 6 a.m. to 6 p.m. if at least six hours notice is given. The draw need not be opened from 6 p.m. to 6 a.m.

**§117.313 New River.**

(1005) (a) The draw of the S.E. Third Avenue bridge, mile 1.4 at Fort Lauderdale shall open on signal; except that, from 7:30 a.m. to 9 a.m. and 4:30 p.m. to 6 p.m., Monday through Friday, except Federal holidays the draw need not open. Public vessels of the United States, tugs with tows, and vessels in distress shall be passed at any time.

(1006) (b) The draw of the Andrews Avenue bridge, mile 2.3 at Fort Lauderdale, shall open on signal; however, the draw need not be opened for upbound vessels when the draw of the Florida East Coast railroad bridge, mile 2.5 at Fort Lauderdale, is in the closed position for the passage of a train.

**§117.315 New River, South Fork.**

(1007) (a) The draw of the Davie Boulevard (SW. Twelfth Street) bridge, mile 0.9 at Fort Lauderdale shall open on signal; except that, from 7:30 a.m. to 9 a.m. and 4:30 p.m. to 6 p.m., Monday through Friday, except Federal holidays, the draw need not open. Public vessels of the United States, tugs with tows, and vessels in distress shall be passed at any time.

(1008) (b) The draw of the SR84 bridge, mile 4.4 at Fort Lauderdale, shall open on signal if at least 24 hours notice is given. Public vessels of the United States, regularly scheduled cruise vessels, tugs with tows, and vessels in distress shall be passed through the draw as soon as possible.

**§117.317 Okeechobee Waterway.**

(1009) (a) Exempt Vessels. This term means public vessels of the United States and tugs with tows.

(1010) (b) Evans Crary (SR A1A) bridge, mile 3.4 at Stuart. The draw shall open on signal; except that from December 1 through May 1, from 7 a.m. to 6 p.m., Monday through Friday, except federal holidays, the draw need open only on the hour and half-hour. On Saturdays, Sundays, and federal holidays, December 1, through May 1, from 8 a.m. to 6 p.m., the draw need open only on the hour, 20 minutes after the hour, and 40 minutes after the hour. Exempt vessels shall be passed at any time.

(1011) (c) Florida East Coast Railroad bridge, mile 7.4 at Stuart. The draw shall operate as follows:

(1012) (1) The bridge is not constantly tended.

(1013) (2) The draw is normally in the fully open position, displaying flashing green lights to indicate that vessels may pass.

(1014) (3) When a train approaches the bridge, the navigation lights go to flashing red and a horn sounds four blasts, pauses, and then repeats four blasts. After an eight minute delay, the draw lowers and locks, providing the scanning equipment reveals nothing under the draw. The draw remains down for a period of eight minutes or while the approach track circuit is occupied.

(1015) (4) After the train has cleared, the draw opens and the lights return to flashing green.

(1016) (d) Roosevelt (US1) bridge, mile 7.4 at Stuart. The draw shall open on signal; except Monday through Friday, except federal holidays, from 7 a.m. to 6 p.m. the draw need open only on the hour and half hour. However, the draw need not open between 7:30 a.m. and 9 a.m. and 4 p.m. and 5:30 p.m. except at 8:15 a.m. and 4:45 p.m. On Saturdays, Sundays, and federal holidays from 8 a.m. to 6 p.m. the draw need open only on the hour, 20 minutes after the hour, and 40 minutes after the hour. When the adjacent railway bridge is in the closed position at the time of a scheduled opening the draw need not open, but it must then open immediately upon opening of the railroad bridge to pass all accumulated vessels. Exempt vessels shall be passed at any time.

(1017) (e) Seaboard System Railroad bridge, mile 28.2 at Indiantown. The draw shall open on signal; except that, from 10 p.m. to 6 a.m. the draw shall open on signal if at least three hours notice is given.

(1018) (f) Florida East Coast Railroad bridge, mile 38.0, at Port Mayaca.

(1019) (1) The bridge is not constantly tended.

(1020) (2) The draw is normally in the fully open position, displaying flashing green lights to indicate that vessels may pass.

(1021) (3) When a train approaches the bridge, it will stop and a crew member will observe the waterway for approaching vessels, which will be allowed to pass. Upon manual signal, the bridge lights will go to flashing red, and the horn will sound four blasts, pause, then repeat four blasts, then the draw will lower and lock, providing scanning equipment reveals nothing under the span.

(1022) (4) After the train has cleared, the draw will open, and the lights will return to flashing green.

(1023) (g) Belle Glade Dike (SR 71) bridge, mile 60.7 between Torry Island and Lake Shore. The draw shall open on signal from 7 a.m. to 6 p.m. Monday through Thursday, and from 7 a.m. to 7 p.m. Friday through Sunday. At all other times, the draw need not be opened for passage of vessels.

(1024) (h) Seaboard System Railroad bridge, mile 78.3 at Moore Haven. The draw shall open on signal; except that, from 10 p.m. to 6 a.m. the draw need not be opened for the passage of vessels.

(1025) (i) Highway bridges at Moore Haven (mile 78.4), La Belle (mile 103.0), Denaud (mile 108.2), Alva (mile 116.0), and Olga (mile 126.3). The draws shall open on signal; except that, from 10 p.m. to 6 a.m. the draws shall open on signal if at least three hours notice is given.

**§117.319 Oklawaha River.**

(1026) (a) The draws of the Sharpes Ferry (SR 40) bridge, mile 55.1, and Muclan Farms bridge, mile 63.9, shall open on signal if at least three hours notice is given.

(1027) (b) The draw of the Moss Bluff (SR464) bridge, mile 66.0, need not open for the passage of vessels.

**§117.324 Rice Creek.**

(1028) The CSX Railroad swingbridge, mile 0.8, in Putnam County, shall open on signal from 8 a.m. to 4 p.m., daily. From 4:01 p.m. to 7:59 a.m., daily, the bridge shall open with a 24-hour advance notice to CSX at 1-800-232-0142.

**§117.325 St. Johns River.**

(1029) (a) The drawspan for the Main Street (US17) drawbridge, mile 24.7 at Jacksonville, must open on signal except that, from 7 a.m. to 8:30 a.m. and from 4:30 p.m. to 6 p.m., Monday through Saturday except Federal holidays, the drawspan need not be opened for the passage of vessels.

(1030) (b) The draw of the Florida East Coast automated railroad bridge, mile 24.9, shall operate as follows:

(1031) (1) The bridge shall be constantly tended and have a mechanical override capability for the automated operation. A radiotelephone shall be maintained at the bridge for the safety of navigation.

(1032) (2) The draw is normally in the fully open position, displaying flashing green lights to indicate that vessels may pass.

(1033) (3) When a train approaches, large signs on both the upstream and downstream sides of the bridge flash "Bridge Coming Down," the lights go to flashing red, and siren signals sound. After an eight minute delay, the draw lowers and locks if there are no vessels under the draw. The draw remains down for a period of eight minutes or while the approach track circuit is occupied.

(1034) (4) After the train has cleared, the draw opens and the lights return to flashing green.

**§117.329 St. Marys River.**

(1035) The draws of US17 bridge, mile 23.0, and the Seaboard System Railroad bridge, mile 23.1, both at King Island, shall open on signal if at least 48 hours notice is given.

**§117.331 Snake Creek.**

(1036) The draw of the Snake Creek bridge, at Islamorada, Florida, shall open on signal, except that from 8 a.m. to 4 p.m., the draw need open only on the hour and half-hour.

**§117.335 Taylor Creek.**

(1037) The draw of US441 bridge, mile 0.3 at Okeechobee, shall open on signal if at least two hours notice is given.

**§117.337 Trout River.**

(1038) The draw of the CSX Railroad Bridge across the Trout River, mile 0.9 at Jacksonville, operates as follows:

(1039) (a) The bridge is not tended.

(1040) (b) The draw is normally in the fully open position, displaying green lights to indicate that vessels may pass.

(1041) (c) As a train approaches, provided the scanners do not detect a vessel under the draw, the lights change to flashing red and a horn continuously sounds while the draw closes. The draw remains closed until the train passes.

(1042) (d) After the train clears the bridge, the lights continue to flash red and the horn again continuously sounds while the draw opens, until the draw is fully open and the lights return to green.

**§117.351 Altamaha River.**

(1043) (a) The draws of all bridges, except the Seaboard System Railroad bridge, mile 59.4 at Doctortown, shall open on signal if at least 24 hours notice is given.

(1044) (b) The draw of the Seaboard System Railroad bridge, mile 59.4 at Doctortown, shall open on signal if at least seven days notice is given.

**§117.353 Atlantic Intracoastal Waterway, Savannah River to St. Marys River.**

(1045) (a) General. Public vessels of the United States and tugs with tows must, upon proper signal, be passed through the drawspan of each drawbridge in this section at anytime.

(1046) (b) Causton Bluff, SR 26, mile 579.9 near Causton Bluff. The draw shall open on signal, except that from 6:30 a.m. to 9 a.m. and 4:30 p.m. to 6:30 p.m. Monday through Friday, except Federal holidays, the draw need open only at 7 a.m., 8 a.m. and 5:30 p.m.

(1047) (c) Skidaway Bridge, SR 204, mile 592.9 near Savannah. The draw will open as necessary on the hour from 7 a.m. to 9 a.m. (7, 8, and 9 a.m.) and on the half-hour between 4:30 p.m. to 6:30 p.m. (4:30, 5:30, and 6:30 p.m.), daily; Monday through Friday except Federal holidays. The draw shall open at any time for Public vessels of the United States, tugs with tows, and vessels in distress. At all other times, the draw will open on signal.

**§117.363 Ocmulgee River.**

(1048) The draws of each bridge shall open on signal if at least 24 hours notice is given.

**§117.365 Oconee River.**

(1049) The draw of the SR46 bridge, mile 44.3 near Soperton, shall open on signal if at least 24 hours notice is given.

**§117.367 Ogeechee River.**

(1050) (a) The draw of the Seaboard System Railroad bridge, mile 30.7 at Richmond Hill, shall open on signal if at least 15 days notice is given.

(1051) (b) The draw of the highway bridge, mile 37.8 near Richmond Hill, need not be opened for the passage of vessels.

**§117.369 Satilla River.**

(1052) The draw of the Seaboard System Railroad bridge, mile 25.7 at Woodbine, shall open on signal if at least 24 hours notice is given.

**§117.371 Savannah River.**

(1053) (a) The draw of the Houlihan bridge (US 17) mile 21.6 at Savannah shall open on signal if at least three hours advance notice is given to the Georgia Department of Transportation Area Engineer in Savannah.

(1054) (b) The draw of the Seaboard System Railroad bridge, mile 27.4 near Hardeeville, South Carolina, shall open on signal if at least three hours advance notice is given. VHF radiotelephone communications will be maintained at the railroad's chief dispatcher's office in Savannah.

(1055) (c) The draw of the CSX Transportation railroad bridge, mile 60.9, near Clyo, Georgia, shall open on signal if at least 48 hours advance notice is given. Openings can be arranged by contacting CSX Transportation on Channel 16 VHF or by telephone at 1-800-232-0146. VHF radiotelephone communications will be maintained at the dispatcher's office in Savannah, Georgia.

(1056) (d) The draw of the Seaboard System Railroad bridge, mile 195.4 near Augusta, shall open on signal if at least three hours notice is given.

**§117.373 St. Marys River.**

(1057) See §117.329, St. Marys River, listed under Florida.

**§117.820 Atlantic Intracoastal Waterway (Alternate Route), Great Dismal Swamp Canal.**

(1058) The draw of the Great Dismal Swamp Canal Bridge, mile 28.0 at South Mills, NC, shall operate as follows:

(1059) (a) The draw shall remain in the open position for navigation. The draw shall only be closed for pedestrian crossings or periodic maintenance authorized in accordance with Subpart A of this part.

(1060) (b) The bridge shall be operated by the Park Service Rangers at the Great Dismal Swamp Visitors Center. Operational information will be provided 24 hours a day on marine channel 13.

(1061) (c) The bridge shall not be operated when the operator's visibility is impaired.

(1062) (d) Before the bridge closes for any reason, the operator will monitor waterway traffic in the area. The bridge shall only be closed if the operator's visual inspection shows that the channel is clear and there are no vessels transiting in the area. While the bridge is moving, the operator shall maintain constant surveillance of the navigation channel.

(1063) (e) Before closing the draw, the horn will sound five short blasts. Five short blasts of the horn will continue until the bridge is seated and locked down to vessels.

(1064) (f) When pedestrian traffic has cleared, the horn will sound one prolonged blast followed by one short blast to indicate the draw is opening to vessel traffic.

**§117.821 Atlantic Intracoastal Waterway, Albermarle Sound to Sunset Beach.**

(1065) (a) The drawbridges across the Atlantic Intracoastal Waterway in North Carolina shall open on signal for commercial vessels at all times and on signal for pleasure vessels, except at the times and during the periods specified in this paragraph:

(1066) (1) Onslow Beach Swing Bridge, mile 240.7, at Cap Lejeune, NC, between 7 a.m. and 7 p.m., the draw need only open on the hour and half hour.

(1067) (2) S.R. 50 Bridge, mile 260.7, at Surf City, NC, between 7 a.m. and 7 p.m., the draw need only open on the hour.

(1068) (3) Figure Eight Swing Bridge, mile 278.1, at Scotts Hill, NC, the draw need only open on the hour and half hour.

(1069) (4) S.R. 74 Bridge, mile 283.1, at Wrightsville Beach, NC, between 7 a.m. and 7 p.m., the draw need only open on the hour, except that from 7 a.m. to 11 a.m. on the third and fourth Saturday in September of every year and between 7 a.m. and 10:30 a.m. on the last Saturday of October each year or the first or second Saturday of November of every year the draw need not open for vessels due to annual triathlon events.

(1070) (5) S.R. 1172 Bridge, mile 337.9, at Sunset Beach, NC, shall open on the hour on signal between 7 a.m. to 9 p.m.

(1071) (b) If a pleasure vessel is approaching a drawbridge which is only required to open on the hour or on the hour and half hour, and cannot reach the drawbridge on the hour or on the half hour, drawtender may delay the required opening up to 10 minutes past the hour or half hour.

**§117.822 Beaufort Channel, N.C.**

(1072) The draw of the US 70 bridge, mile 0.1, at Beaufort, shall open as follows:

(1073) (a) From 6 a.m. to 10 p.m., the draw need only open every hour on the hour and on the half hour; except that Monday through Friday the bridge need not open between the hours of 6:30 a.m. to 8 a.m. and 4:30 p.m. to 6 p.m.

(1074) (b) From 10 p.m. to 6 a.m., the bridge shall open on signal.

**§117.823 Cape Fear River.**

(1075) The draw of the Cape Fear Memorial Bridge, mile 26.8, at Wilmington need not open for the passage of vessel from 8 a.m. to 10 a.m. on the second Saturday of July of every year, and from 7 a.m. to 11 a.m. on the first or second Sunday of November of every year to accommodate annual marathon races.

**§117.824 Neuse River.**

(1076) (a) The draw of the U.S. 17 bridge, mile 33.7, at New Bern:

(1077) (1) Need not open from 6:30 a.m. to 8:30 a.m. and from 4:00 p.m. to 6:00 p.m., Monday through Friday, for pleasure vessels. However, the draw shall open at 7:30 a.m. and 5:00 p.m., for any vessel waiting to pass.

(1078) (2) Need not open from 2:00 p.m. to 7:00 p.m. from May 24 through September 8, on Sundays and Federal holidays, for pleasure vessels. However, the draw shall open at 4:00 p.m. and 6:00 p.m., for any vessel waiting to pass.

(1079) (3) Must always open on signal for public vessels of the United States.

(1080) (4) Shall open on signal at all other times.

(1081) (b) The draw of the Atlantic and East Carolina Railway bridge, mile 80.0 at Kinston, shall open on signal if at least 24 hours notice is given.

**§117.825 Newport River.**

(1082) The draw of the Atlantic and East Carolina Railway bridge, mile 13.0 at Newport, need not be opened for the passage of vessels.

**§117.829 Northeast Cape Fear River.**

(1083) (a) The draw of the Isabel S. Holmes Bridge, at mile 1.0, at Wilmington, North Carolina will operate as follows:

(1084) (1) The draw will be closed to pleasure craft from 6 a.m. to 6 p.m. every day except at 10 a.m. and 2 p.m. when the draw will open for all waiting vessels.

(1085) (2) The draw will open on signal for Government and commercial vessels at all times.

(1086) (3) The draw will open for all vessels on signal from 6 p.m. to 6 a.m.

(1087) (4) From 8 a.m. to 10 a.m. on the second Saturday of July of every year, from 12 p.m. to 11:59 p.m. on the last Saturday of October or the first or second Saturday of November of every year, and from 7 a.m. to 11 a.m. on the first or second Sunday of November of every year, the draw need not open for vessels to accommodate annual marathon and triathlon races.

(1088) (b) The CSX Hilton Railroad Bridge, mile 1.5 in Wilmington, NC shall operate as follows:

(1089) (1) The draw of the bridge to be remotely operated by the controller at the Navassa Railroad Bridge mile 34.0 across the Cape Fear River.

(1090) (2) The draw shall be left in the open position to vessels and will only be closed for the passage of trains and to perform periodic maintenance authorized in accordance with Subpart A of this part.

(1091) (3) Trains shall be controlled so that any delay in opening of the draw shall not exceed ten minutes except as provided in 117.31(b).

(1092) (4) The CSX Hilton Railroad Bridge shall not be operated by the controller at the CSX Navassa Railroad in the event of failure or obstruction of the motion sensors, laser scanners, video cameras or marine-radio communications. In these situations, a bridge tender must be called to operate the bridge on-site.

(1093) (5) When rail traffic has cleared, the horn will automatically sound one prolonged blast followed by one short blast to indicate that the CSX Hilton Railroad Bridge is moving to the full open position to vessels. During open span movement, the channel traffic lights will flash red, until the bridge is in the full open position to vessels. In the full open position to vessels, the bridge channel traffic lights will flash green, allowing vessels to pass safely.

(1094) (6) During closing span movement, the channel traffic lights will flash red, the horn will sound five short blasts, and an audio voice-warning device will announce bridge movement. Five short blasts of the horn will continue until the bridge is seated and locked down. When the bridge is seated and in the locked down position to vessels, the channel traffic lights will continue to flash red.

(1095) (c) The draw of the Seaboard System Railroad Bridge across the Northeast Cape Fear River, mile 27.0, at Castle Hayne, North Carolina shall open on signal if at a least 4 hours notice is given.

**§117.831 Pamlico and Tar Rivers.**

(1096) The draws of the US17-264 bridge, mile 37.2 at Washington, and the Boyds Ferry bridge, mile 44.8 at Grimesland, shall open on signal if at least 24 hours notice is given. The bridge owners shall restore constant attendance when so directed by the District Commander.

**§117.833 Pasquotank River.**

(1097) (a) The draw of the Albermarle & Chesapeake railroad bridge, mile 47.7, at Elizabeth City, North Carolina, shall be maintained in the open position; the draw may close only for the crossing of trains and maintenance of the bridge. When the draw is closed, a bridgetender shall be present to reopen the draw after the train has cleared the bridge.

(1098) (b) The draw of the US 158 Highway Bridge, mile 50.7, at Elizabeth City, shall open on signal; except that between 7 a.m. and 9 a.m., and 4 p.m. and 6 p.m., Monday through Friday, the draw need open only at 7:30 a.m., 8:30 a.m., 4:30 p.m., and 5:30 p.m. for any pleasure vessels waiting to pass.

**§117.835 Perquimans River.**

(1099) The draw of the US17 bridge, mile 12.0 at Hertford, shall open on signal from 8 a.m. to midnight from April 1 through September 30 and from 10 a.m. to 10 p.m. from October 1 through March 31. The draw need not be opened at all other times.

**§117.837 Roanoke River.**

(1100) The draw of the Seaboard System Railroad bridge, mile 94.0 at Palmyra, need not be opened for the passage of vessels.

**§117.841 Smith Creek.**

(1101) The draw of the S117-S133 bridge, mile 1.5 at Wilmington, need not open for the passage of vessels.

**§117.843 Trent River.**

(1102) (a) The draw of the U.S. 70 bridge, mile 0.0, at New Bern:

(1103) (1) Need not open from 6:30 a.m. to 8:30 a.m. and from 4:00 p.m. to 6:00 p.m., Monday through Friday, for pleasure vessels. However, the draw shall open at 7:30 a.m. and 5:00 p.m. for any vessel waiting to pass.

(1104) (2) Need not open from 2:00 p.m. to 7:00 p.m. from May 24 through September 8, on Sundays and Federal holidays, for pleasure vessels. However, the draw shall open at 4:00 p.m. and 6:00 p.m. for any vessel waiting to pass.

(1105) (3) Must always open on signal for public vessels of the United States.

(1106) (4) Shall open on signal at all other times.

(1107) (b) The draws of the Seaboard System Railroad bridge, mile 18.0 near Pollocksville, need not be opened for the passage of vessels.

**§117.911 Atlantic Intracoastal Waterway, Little River to Savannah River.**

(1108) (a) General. Public vessels of the United States and tugs with tows, upon proper signal, will be passed through the drawspan of each drawbridge listed in this section at any time.

(1109) (b) [Reserved]

(1110) (c) Ben Sawyer (SR703) bridge across Sullivan's Island Narrows, mile 462.2 between Sullivan's Island and Mount Pleasant. The draw shall open on signal, except that the draw need not open from 7 a.m. to 9 a.m. and from 4 p.m. to 6 p.m. Monday through Friday except federal holidays. On Saturdays, Sundays, and federal holidays, from 9 a.m. to 7 p.m., the draw need open only on the hour.

(1111) (d) SR 171/700 bridge across Wappoo Creek Mile 470.8 at Charleston. The draw shall open on signal, except that from April 1 to November 30 from 9 a.m. to 4 p.m. Monday through Friday, except federal holidays, and from 9 a.m. to 7 p.m., on Saturdays, Sundays and federal holidays, the bridge need not open except on the hour and half-hour. From June 1 to September 30 and from December 1 to March 30 the draw need not open from 6:30 a.m. to 9 a.m. and from 4 p.m. to 6:30 p.m. Monday through Friday, except federal holidays, and from April 1 to May 31 and from October 1 to November 30 Monday through Friday, except federal holidays, the draw need not open from 6 a.m. to 9 a.m. and from 4 p.m. to 6:30 p.m.

(1112) (e) John Limehouse Bridge across the Stone River, mile 479.3 at Johns Island. The draw of the John Limehouse Bridge shall open on signal; except that the draw need not open from 6:30 a.m. to 9 a.m. and from 4 p.m. to 6:30 p.m., Monday through Friday except Federal holidays. Between 9 a.m. and 4 p.m., Monday through Friday except Federal holidays, the draw need open only on the hour and half hour. The draw shall open as soon as possible for the passage of tugs with tows, public vessels of the United States and vessels in a situation where a delay would endanger life or property.

(1113) (f) Lady's Island Bridge, across the Beaufort River, Mile 536.0 at Beaufort. The draw shall operate as follows:

(1114) (1) On Monday through Friday, except Federal holidays:

(1115) (i) From 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m., the draw need not open, and,

(1116) (ii) Between 9 a.m. to 4 p.m., the draw need open only on the hour and half-hour.

(1117) (2) At all other times the draw shall open on signal.

**§117.913 Ashepoo River.**

(1118) The draw of the Seaboard System Railroad bridge, mile 32.0 at Ashepoo, need not be opened for the passage of vessels. However, the draw shall be returned to operable condition within six months after notification by the District Commander to do so.

**§117.915 Ashley River.**

(1119) (a) The draws of the US17 highway bridges, miles 2.4 and 2.5 at Charleston, shall open on signal; except that, from 7 a.m. to 9 a.m. Monday through Friday and 4 p.m. to 7 p.m. daily, the draws need be opened only if at least 12 hours notice is given. The draws of either bridge shall open as soon as possible for the passage of vessels in an emergency involving danger to life or property.

(1120) (b) The draw of the Seaboard System Railroad bridge, mile 12.0 near Drayton Hall, shall open on signal from 7 a.m. to 11 p.m. From 11 p.m. to 7 a.m., the draw shall open on signal if at least three hours notice is given.

**§117.917 Battery Creek.**

(1121) The draw of the State highway bridge, mile 2.1 between Beaufort and Parris Island, shall open on signal if at least 24 hours notice is given.

**§117.921 Broad River.**

(1122) (a) The draw of the S170 bridge, mile 14.0 near Beaufort, shall open on signal if at least 24 hours notice is given.

(1123) (b) The draw of the Seaboard System Railroad bridge, mile 17.0 near Whale Branch, shall open on signal if at least 24 hours notice is given.

**§117.923 Congaree River.**

(1124) The draw of the Southern Railway bridge, mile 4.3 at Moye's Station, shall open on signal if at least 24 hours notice is given.

**§117.925 Cooper River.**

(1125) The draw of the Seaboard System Railroad bridge, mile 42.8 near Cordesville, shall open on signal if at least six hours advance notice is given.

**§117.927 Coosaw River (Whale Branch).**

(1126) The draw of the Seaboard System Railroad bridge, mile 5.3 at Seabrook, and the draw of the US21 bridge, mile 7.0 at Beaufort, shall open on signal from 6 a.m. to 8 p.m. Monday through Friday if at least 24 hours notice is given. At all other times, the draw need not be opened for the passage of vessels.

**§117.929 Durham Creek.**

(1127) The removable span of the Seaboard System Railroad bridge, mile 1.7 at Bushy Park, shall be removed to allow the passage of dredges and construction equipment if at least 20 days notice is given. When notified

by the City of Charleston of an emergency in the Bushy Park Reservoir, the span shall be removed as soon as possible to permit the passage of dredges and construction equipment.

**§117.933 Pee Dee River.**

(1128) The draws of the Seaboard System Railroad bridges, mile 72.6 near Poston and mile 107.2 near Pee Dee, need not be opened for the passage of vessels.

**§117.935 Rantowles Creek.**

(1129) The draw of the Seaboard System Railroad bridge, 1.1 near Rantowles, need not be opened for the passage of vessels.

**§117.936 Savannah River.**

(1130) **See §117.371, Savannah River, listed under Georgia.**

**§117.937 [Suspended]**

**§117.938 Waccamaw River.**

(1131) The draw of the Waccamaw Coast Line Railroad bridge, mile 44.4 at Conway, shall open on signal; except that from 8 a.m. to 6 p.m. Monday through Friday, the draw shall open on signal if at least one hour notice is given.

**§117.939 Wando River.**

(1132) The draw of the S41 bridge, mile 10.0 near Cainhoy, shall open on signal if at least 12 hours notice is given.

**§117.997 Atlantic Intracoastal Waterway, South Branch of the Elizabeth River to the Albermarle and Chesapeake Canal.**

(1133) (a) The draw of the Belt Line Railroad Bridge, mile 2.6, in Portsmouth and Chesapeake will operate as follows:

(1134) (1) The bridge will be left in the open position at all times and will only be lowered for the passage of trains and to perform periodic maintenance authorized in accordance with subpart A of this part.

(1135) (2) The bridge will be operated by the controller at the Berkley Yard office.

(1136) (3) The controller will monitor waterway traffic in the area of the bridge and directly beneath the bridge with closed circuit cameras mounted on top of the bridge and with surface navigational radar.

(1137) (4) When the bridge closes for any reason, the controller will announce 30 minutes in advance, 15 minutes in advance, and immediately proceeding the actual lowering, over marine channel 13, that the Belt Line Railroad Bridge is closing for river traffic. In each of these three announcements, the bridge/train controller will request all concerned river traffic to please acknowledge on marine channel 13.

(1138) (5) The bridge shall only be operated from the remote site if closed circuit visual and radar information shows there are no vessels in the area and no opposing radio communications have been received.

(1139) (6) While the Belt Line Bridge is moving from the full open position to the full closed position, the bridge/train controller will maintain constant surveillance of the navigational channel to ensure no conflict with maritime traffic exists. In the event of failure of a camera or the radar system, or loss of marine-radio communications, the bridge shall not be operated by the off-site bridge/train controller from the remote location.

(1140) (7) If the off-site bridge/train controller's visibility of the navigational channel is less than \3/4\ of a mile, the bridge shall not be operated from the remote location.

(1141) (8) When the draw cannot be operated from the remote site, a bridgetender must be called to operate the bridge in the traditional on- site manner.

(1142) (9) The Belt Line mid-channel lights will change from green to red anytime the bridge is not in the full open position.

(1143) (10) During the downward and upward span movement, a warning alarm will sound until the bridge is seated and locked down or in the full open position.

(1144) (11) When the bridge has returned to its full up position, the midchannel light will turn from red to green, and the controller will announce over marine radio channel 13, “Security, security, security, the Belt Line bridge is open for river traffic.” Operational information will be provided 24 hours a day on marine channel 13 and via telephone 757-543-1996 or 757-545-2941.

(1145) (b) The draw of the Norfolk and Western railroad bridge across the South Branch of the Elizabeth River, mile 3.6 at Portsmouth-Chesapeake, shall be maintained in the open position; except the draw may close for the crossing of trains and maintenance of the bridge. When the draw is closed, a drawtender shall be present and the draw shall open on signal.

(1146) (c) The draw of the Gilmerton (US13/460) bridge, mile 5.8, in Chesapeake:

(1147) (1) Shall open on signal at any time for commercial vessels carrying liquified flammable gas or other hazardous materials.

(1148) (2) From 6:30 a.m. to 8:30 a.m. and from 3:30 to 5:30 p.m., Monday through Friday, except Federal holidays:

(1149) (i) Need not open for the passage of recreational or commercial vessels that do not qualify under paragraph (d)(2)(ii) of this section.

(1150) (ii) Need not open for commercial cargo vessels, including tugs, and tugs with tows, unless 2 hours advance notice has been given to the Gilmerton Bridge at 757-545-1512.

(1151) (3) Shall open on signal at all other times.

(1152) (d) The draw of the Norfolk Southern #7 Railroad Bridge, mile 5.8 in Chesapeake, shall operate as follows:

(1153) (1) The draw shall be remotely controlled by the operator at the Norfolk Southern #5 Railroad Bridge office over the Eastern Branch of the Elizabeth River, at mile 1.1, in Norfolk.

(1154) (2) The draw shall be left in the open position to vessels and will only be closed for the passage of trains and to perform periodic maintenance authorized in accordance with subpart A of this part.

(1155) (3) Trains shall be controlled so that any delay in opening of the draw shall not exceed ten minutes except as provided in §117.31(b).

(1156) (4) Before the bridge closes for any reason, the off-site remote operator will monitor waterway traffic in the area with closed circuit cameras and motion sensors mounted on the bridge. The bridge will only be closed if the off-site remote operator's visual inspection shows that the channel is clear and there are no vessels transiting in the area.

(1157) (5) While the bridge is moving from the full open position to the full closed position, the off-site remote operator will maintain constant surveillance of the navigation channel to ensure that no conflict with maritime traffic exists. In the event of failure or obstruction, the off-site remote operator will stop and return the bridge to the full open position to vessels. In the event of a failure or obstruction, a bridge tender must be called by the off-site remote operator and must be on-site within 30 minutes of the call to operate the bridge.

(1158) (6) During closing of the span, the channel traffic lights will change from flashing green to flashing red, the horn will sound twice, and an audio voice warning device will announce bridge movement, then two repeat blasts of the horn will sound until the bridge is seated and locked down. When the bridge is seated and locked down to vessels, the channel traffic lights will flash red.

(1159) (7) During the open span movement, the channel traffic lights will flash red, the horn will sound twice, followed by a pause, and then five repeat blasts of the horn will sound until the bridge is in the full open position to vessels. In the full open position to vessels, the bridge channel traffic lights will turn from flashing red to flashing green then an audio warning device will announce bridge movement by stating "Security, security, security, the Norfolk Southern #7 Railroad Bridge at mile 5.8 is open for river traffic"

(1160) (8) Operational information will be provided 24 hours a day on marine channel 13 and via telephone 757-924-5320.

(1161) (e) The draw of the I-64 bridge across the South Branch of the Elizabeth River, mile 7.1 at Chesapeake, shall open on signal if at least 24 hours notice is given.

(1162) (f) The draw of the Dominion Boulevard (US 17) bridge, mile 8.8, in Chesapeake:

(1163) (1) Shall open on signal at any time for commercial vessels carrying liquified flammable gas or other hazardous materials.

(1164) (2) From 7 a.m. to 9 a.m. and from 4 p.m. to 6 p.m., Monday through Friday, need not open for the passage of recreational vessels, and need open for commercial cargo vessels not carrying hazardous materials, including tugs and tugs with tows, only when notice has been given at least 2 hours in advance to the Dominion Boulevard Bridge at 757-547-0521.

(1165) (3) From 6 a.m. to 7 a.m. and from 9 a.m. to 4 p.m., Monday to Friday, and from 6 a.m. to 6 p.m. on Saturdays, Sundays, and Federal holidays, the draw need only be opened every hour on the hour, except the draw shall open on signal for commercial vessels that qualify under paragraphs (g)(1) or (g)(2) of this section.

(1166) (4) If any vessel is approaching the bridge and cannot reach the draw exactly on the hour, the drawtender may delay the opening up to ten minutes past the half hour for the passage of the approaching vessel and any other vessels that are waiting to pass.

(1167) (5) Shall open on signal at all other times.

(1168) (g) The draw of the S168 bridge, mile 12 at Chesapeake (Great Bridge), shall open on signal; except that, from 6 a.m. to 7 p.m., the draw need be opened only on the hour. If any vessel is approaching the bridge and cannot reach the draw exactly on the hour, the drawtender may delay the hourly opening up to 10 minutes past the hour for the passage of the approaching vessel and any other vessels that are waiting to pass. Vessels in an emergency condition which presents danger to life or property shall be passed at any time.

(1169) (h) The draw of the Albemarle & Chesapeake Railroad bridge, mile 13.9, in Chesapeake, Virginia, shall be maintained in the open position; the draw may close only for the crossing of trains and maintenance of the bridge. When the draw is closed, a bridgetender shall be present to reopen the draw after the train has cleared the bridge.

(1170) (i) The draw of the Centerville Turnpike (SR 170) bridge across the Albemarle and Chesapeake Canal, mile 15.2, at Chesapeake:

(1171) (1) Shall open on signal at any time for commercial vessels carrying liquefied flammable gas or other hazardous materials.

(1172) (2) From 6:30 a.m. to 8.:30 a.m. and from 4 p.m. to 6 p.m., Monday through Friday, except Federal holidays:

(1173) (i) Need not open for the passage of recreational or commercial vessels that do not qualify under paragraph (i)(2)(ii) of this section.

(1174) (ii) Need not open for commercial cargo vessels, including tugs, and tugs with tows, unless 2 hours advance notice has been given to the Centerville Turnpike bridge at 757-547-3632.

(1175) (3) From 8:30 a.m. to 4 p.m., Monday through Friday, except Federal holidays, the draw need only be opened on the hour and half hour.

(1176) (4) If any vessel is approaching the bridge and cannot reach the draw exactly on the hour or half hour, the drawtender may delay the opening ten minutes past the hour or half hour for the passage of the approaching vessel and any other vessels that are waiting to pass.

(1177) (5) Shall open on signal at all other times.

**§117.999 Blackwater River.**

(1178) The draw of the S189 bridge, mile 9.2 at South Quay, shall open on signal if at least 24 hours notice is given.

**Note**

(1179) Call signs and radio channels for drawbridges equipped with radiotelephones are included with the bridge descriptions in chapters 4 through 12.

## Part 157–Rules for the Protection of the Marine Environment relating to Tank Vessels Carrying Oil in Bulk.

## Subpart A–General

**§157.01 Applicability.**

(1180) (a) Unless otherwise indicated, this part applies to each vessel that carries oil in bulk as cargo and that is:

(1181) (1) Documented under the laws of the United States (a U.S. vessel); or

(1182) (2) Any other vessel that enters or operates in the navigable waters of the United States, or that operates, conducts lightering under 46 U.S.C. 3715, or receives cargo from or transfers cargo to a deepwater port under 33 U.S.C. 1501 et seq., in the United States Exclusive Economic Zone, as defined in 33 U.S.C. 2701(8).

(1183) (b) This part does not apply to a vessel exempted under 46 U.S.C. 2109 or 46 U.S.C. 3702.

**§157.02 Incorporation by reference.**

(1184) (a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in Paragraph (b) of this section, the Coast Guard must publish notice of change in the FEDERAL REGISTER; and the material must be available to the public. All approved material is available for inspection at the U.S. Coast Guard, Office of Operating and Environmental Standards, (CG-522), 2100 2nd St. SW., Stop 7126, Washington, DC 20593-7126, and at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. All approved material is available from the sources indicated in paragraph (b) of this section.

(1185) (b) The material approved for incorporation by reference in this part and the sections affected are as follows:

(1186) International Maritime Organization (IMO), 4 Albert Embankment, London SE1 7SR, England. IMO Assembly Resolution A.601(15), Provision and Display of Manoeuvering Information on Board Ships, Annex Sections 1.1, 2.3, 3.1 and 3.2 with appendices, adopted on 19 November 1987 — **157.450**

(1187) IMO Assembly Resolution A.744(18), Guidelines on the Enhanced Programme of Inspections During Surveys of Bulk Carriers and Oil Tankers, Annex B sections 1.1.3-1.1.4, 1.2-1.3, 2.1, 2.3-2.6, 3-8 and Annexes 1-10 with appendices, adopted 4 November 1993 — **157.430**

(1188) IMO Assembly Resolution A.751(18), Interim Standards for Ship Manoeuvrability, Annex sections 1.2, 2.3-2.4, 3-4.2 and 5, adopted 4 November 1993 with Explanatory Notes in MSC/Circ. 644 dated 6 June 1994 — **157.455**

(1189) Oil Compaines International Marine Forum (OCIMF), 15th floor, 96 Victoria Street, London SW1E 5JW, England. International Safety Guide for Oil Tankers and Terminals, Fourth Edition, Chapters 6, 7 and 10, 1996 — **157.435**

**§157.03 Definitions.**

(1190) Except as otherwise stated in a subpart:

(1191) Amidships means the middle of the length.

(1192) Animal fat means a non-petroleum oil, fat, or grease derived from animals and not specifically identified elsewhere in this part.

(1193) Ballast voyage means the voyage that a tank vessel engages in after it leaves the port of final cargo discharge.

(1194) Breadth or B means the maximum molded breadth of a vessel in meters.

(1195) Cargo tank length means the length from the forward bulkhead of the forwardmost cargo tanks, to the after bulkhead of the aftermost cargo tanks.

(1196) Center tank means any tank inboard of a longitudinal bulkhead.

(1197) Clean ballast means ballast which:

(1198) (1) If discharged from a vessel that is stationary into clean, calm water on a clear day, would not–

(1199) (i) Produce visible traces of oil on the surface of the water or on adjoining shore lines; or

(1200) (ii) Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shore lines; or

(1201) (2) If verified by an approved cargo monitor and control system, has an oil content that does not exceed 15 p.m.

(1202) Combination carrier means a vessel designed to carry oil or solid cargoes in bulk.

(1203) Crude oil means any liquid hydrocarbon mixture occurring naturally in the earth, whether or not treated to render it suitable for transportation, and includes crude oil from which certain distillate fractions may have been removed, and crude oil to which certain distillate fractions may have been added.

(1204) Deadweight or DWT means the difference in metric tons between the lightweight displacement and the total displacement of a vessel measured in water of specific gravity 1.025 at the load waterline corresponding to the assigned summer freeboard.

(1205) Dedicated clean ballast tank means a cargo tank that is allocated solely for the carriage of clean ballast.

(1206) Domestic trade means trade between ports or places within the United States, its territories and possessions, either directly or via a foreign port including trade on the navigable rivers, lakes, and inland waters.

(1207) Double bottom means watertight protective spaces that do not carry any oil and which separate the bottom of tanks that hold any oil within the cargo tank length from the outer skin of the vessel.

(1208) Double hull means watertight protective spaces that do not carry any oil and which separate the sides, bottom, forward end, and aft end of tanks that hold any oil within the cargo tank length from the outer skin of the vessel as prescribed in §157.10d.

(1209) Doubles sides means watertight protective spaces that do not carry any oil and which separate the sides of tanks that hold any oil within the cargo tank length from the outer skin of the vessel.

(1210) Existing vessel means any vessel that is not a new vessel.

(1211) Fleeting or assist towing vessel means any commercial vessel engaged in towing astern, alongside, or pushing ahead, used solely within a limited geographic area, such as a particular barge fleeting area or commercial facility, and used solely for restricted service, such as making up or breaking up larger tows.

(1212) Foreign trade means any trade that is not domestic trade.

(1213) From the nearest land means from the baseline from which the territorial sea of the United States is established in accordance with international law.

(1214) Fuel oil means any oil used as fuel for machinery in the vessel in which it is carried.

(1215) Inland vessel means a vessel that is not oceangoing and that does not operate on the Great Lakes.

(1216) Instantaneous rate of discharge of oil content means the rate of discharge of oil in liters per hour at any instant, divided by the speed of the vessel in knots at the same instant.

(1217) Integrated tug barge means a tug and a tank barge with a mechanical system that allows the connection of the propulsion unit (the tug) to the stern of the cargo carrying unit (the tank barge) so that the two vessels function as a single self-propelled vessel.

(1218) Large primary structural member includes any of the following:

(1219) (1) Web frames.

(1220) (2) Girders.

(1221) (3) Webs.

(1222) (4) Main brackets.

(1223) (5) Transverses.

(1224) (6) Stringers.

(1225) (7) Struts in transverse web frames when there are 3 or more struts and the depth of each is more than 1/15 of the total depth of the tank.

(1226) Length or L means the distance in meters from the fore side of the stem to the axis of the rudder stock on a waterline at 85 percent of the least molded depth measured from the molded baseline, or 96 percent of the total length on that waterline, whichever is greater. In vessels designed with drag, the waterline is measured parallel to the designed waterline.

(1227) Lightweight means the displacement of a vessel in metric tons without cargo, fuel oil, lubricating oil, ballast water, fresh water, and feedwater in tanks, consumable stores, and any persons and their effects.

(1228) Major conversion means a conversion of an existing vessel that:

(1229) (1) Substantially alters the dimensions or carrying capacity of the vessel, except a conversion that includes only the installation of segregated ballast tanks, dedicated clean ballast tanks, a crude oil washing system, double sides, a double bottom, or a double hull;

(1230) (2) Changes the type of vessel;

(1231) (3) Substantially prolongs the vessel's service life; or

(1232) (4) Otherwise so changes the vessel that it is essentially a new vessel, as determined by the Commandant (CG-543).

(1233) MARPOL 73/78 means the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating to that Convention. A copy of MARPOL 73/78 is available from the International Maritime Organization, 4 Albert Embankment, London, SE1, 7SR, England.

(1234) New vessel means:

(1235) (1) A U.S. vessel in domestic trade that:

(1236) (i) Is constructed under a contract awarded after December 31, 1974;

(1237) (ii) In the absence of a building contract, has the keel laid or is at a similar stage of construction after June 30, 1975;

(1238) (iii) Is delivered after December 31, 1977; or

(1239) (iv) Has undergone a major conversion for which:

(1240) (A) The contract is awarded after December 31, 1974;

(1241) (B) In the absence of a contract, conversion is begun after June 30, 1975; or

(1242) (C) Conversion is completed after December 31, 1977; and

(1243) (2) A foreign vessel or a U.S. vessel in foreign trade that;

(1244) (i) Is constructed under a contract awarded after December 31, 1975;

(1245) (ii) In the absence of a building contract, has the keel laid or is at a similar stage of construction after June 30, 1976;

(1246) (iii) Is delivered after December 31, 1979; or

(1247) (iv) Has undergone a major conversion for which:

(1248) (A) The contract is awarded after December 31, 1975;

(1249) (B) In the absence of a contract, conversion is begun after June 30, 1976; or

(1250) (C) Conversion is completed after December 31, 1979.

(1251) Non-petroleum oil means oil of any kind that is not petroleum-based. It includes, but is not limited to, animal fat and vegetable oil.

(1252) Oceangoing has the same meaning as defined in §151.05 of this chapter.

(1253) Officer in charge of a navigational watch means any officer employed or engaged to be responsible for navigating or maneuvering the vessel and for maintaining a continuous vigilant watch during his or her periods of duty and following guidance set out by the master, international or national regulations, and company policies.

(1254) Oil means oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil. This includes liquid hydrocarbons as well as animal and vegetable oils.

(1255) Oil cargo residue means any residue of oil cargo whether in solid, semi-solid, emulsified, or liquid form from cargo tanks and cargo pump room bilges, including but not limited to, drainages, leakages, exhausted oil, muck, clingage, sludge, bottoms, paraffin (wax), and any constituent component of oil. The term "oil cargo residue" is also known as "cargo oil residue."

(1256) Oily mixture means a mixture, in any form, with any oil content. "Oily mixture" includes, but is not limited to–

(1257) (1) Slops from bilges;

(1258) (2) Slops from oil cargoes (such as cargo tank washings, oily waste, and oily refuse);

(1259) (3) Oil residue; and

(1260) (4) Oily ballast water from cargo or fuel oil tanks, including any oil cargo residue.

(1261) Oil residue means–

(1262) (1) Oil cargo residue; and

(1263) (2) Other residue of oil whether in solid, semi-solid, emulsified, or liquid form resulting from drainages, leakages, exhausted oil and other similar occurrences from machinery spaces.

(1264) Oil spill response vessel means a vessel that is exclusively dedicated to operations to prevent or mitigate environmental damage due to an actual or impending accidental oil spill. This includes a vessel that performs routine service as an escort for a tank vessel, but excludes a vessel that engages in any other commercial activity, such as the carriage of any type of cargo.

(1265) Oil tanker means a vessel that is constructed or adapted primarily to carry crude oil or products in bulk as cargo. This includes a tank barge, a tankship, and a combination carrier, as well as a vessel that is constructed or adapted primarily to carry noxious liquid substances in bulk as cargo and which also carries crude oil or products in bulk as cargo.

(1266) Other non-petroleum oil means an oil of any kind that is not petroleum oil, an animal fat, or a vegetable oil.

(1267) Permeability of a space means the ratio of volume within a space that is assumed to be occupied by water to the total volume of that space.

(1268) Petroleum oil means petroleum in any form, including but not limited to, crude oil, fuel oil, sludge, oil residue, and refined products.

(1269) Primary towing vessel means any vessel engaged in towing astern, alongside, or pushing ahead and includes the tug in an integrated tug barge. It does not include fleeting or assist towing vessels.

(1270) Product means any liquid hydrocarbon mixture in any form, except crude oil, petrochemicals, and liquefied gases.

(1271) Segregated ballast means the ballast water introduced into a tank that is completely separated from the cargo oil and fuel oil system and that is permanently allocated to the carriage of ballast.

(1272) Slop tank means a tank specifically designated for the collection of cargo drainings, washings, and other oily mixtures.

(1273) Tank means an enclosed space that is formed by the permanent structure of a vessel, and designed for the carriage of liquid in bulk.

(1274) Tank barge means a tank vessel not equipped with a means of self-propulsion.

(1275) Tank vessel means a vessel that is constructed or adapted primarily to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue, and that–

(1276) (1) Is a vessel of the United States;

(1277) (2) Operates on the navigable waters of the United States; or

(1278) (3) Transfers oil or hazardous material in a port or place subject to the jurisdiction of the United States. This does not include an offshore supply vessel, or a fishing vessel or fish tender vessel of not more than 750 gross tons when engaged only in the fishing industry.

(1279) Tankship means a tank vessel propelled by mechanical power or sail.

(1280) Vegetable oil means a non-petroleum oil or fat not specifically identified elsewhere in this part that is derived from plant seeds, nuts, kernels, or fruits.

(1281) Wing tank means a tank that is located adjacent to the side shell plating.

**§157.04 Authorization of classification societies.**

(1282) (a) The Coast Guard may authorize any classification society (CS) to perform certain plan reviews, certifications, and inspections required by this part on vessels classed by that CS except that only U.S. classification societies may be authorized to perform those plan reviews, inspections, and certifications for U.S. vessels.

(1283) (b) If a CS desires authorization to perform the plan reviews, certifications, and inspections required under this part, it must submit to the Commandant (CG-543), U.S. Coast Guard, 2100 2nd St. SW., Stop 7581, Washington, DC 20593-7581, evidence from the governments concerned showing that they have authorized the CS to inspect and certify vessels on their behalf under the MARPOL 73/78.

(1284) (c) The Coast Guard notifies the CS in writing whether or not it is accepted as an authorized CS. If

authorization is refused, reasons for the refusal are included.

(1285) (d) Acceptance as an authorized CS terminates unless the following are met:

(1286) (1) The authorized CS must have each Coast Guard regulation that is applicable to foreign vessels on the navigable waters of the United States.

(1287) (2) Each issue concerning equivalents to the regulations in this part must be referred to the Coast Guard for determination.

(1288) (3) Copies of any plans, calculations, records of inspections, or other documents relating to any plan review, inspection, or certification performed to meet this part must be made available to the Coast Guard.

(1289) (4) Each document certified under §§157.116(a)(2), 157.118(b)(1)(ii), and 157.216(b)(1)(11) must be marked with the name or seal of the authorized CS.

(1290) (5) A copy of the final documentation that is issued to each vessel that is certified under this part must be referred to the Commandant (CG-543), U.S. Coast Guard, 2100 2nd St. SW., Stop 7581, Washington, DC 20593-7581.

## Subpart B–Design, Equipment, and Installation

### §157.08 Applicability of Subpart B.

(1291) NOTE: An "oil tanker" as defined in §157.03 includes barges as well as self-propelled vessels.

(1292) (a) Sections 157.10d and 157.11(g) apply to each vessel to which this part applies.

(1293) (b) Sections 157.11 (a) through (f), 157.12, 157.15, 157.19(b)(3), 157.33, and 157.37 apply to each vessel to which this part applies that carries 200 cubic meters or more of crude oil or products in bulk as cargo, as well as to each oceangoing oil tanker to which this part applies of 150 gross tons or more. These sections do not apply to a foreign vessel which remains beyond the navigable waters of the United States and does not transfer oil cargo at a port or place subject to the jurisdiction of the United States.

(1294) (c) Section 157.21 applies to each oil tanker to which this part applies of 150 gross tons or more that is oceangoing or that operates on the Great Lakes. This section does not apply to a foreign vessel which remains beyond the navigable waters of the United States and does not transfer oil cargo at a port or place subject to the jurisdiction of the United States.

(1295) (d) Sections in subpart B of 33 CFR part 157 that are not specified in paragraphs (a) through (c) of this section apply to each oceangoing oil tanker to which this part applies of 150 gross tons or more, unless otherwise indicated in paragraphs (e) through (m) of this section. These sections do not apply to a foreign vessel which remains beyond the navigable waters of the United States and does not transfer oil cargo at a port or place subject to the jurisdiction of the United States.

(1296) (e) Sections 157.11 (a) through (f), 157.12, and 157.15 do not apply to a vessel, except an oil tanker, that carries less than 1,000 cubic meters of crude oil or products in bulk as cargo and which retains oil mixtures on board and discharges them to a reception facility.

(1297) (f) Sections 157.11 (a) through (f), 157.12, 157.13, and 157.15 do not apply to a tank vessel that carries only asphalt, carbon black feedstock, or other products with similar physical properties, such as specific gravity and cohesive and adhesive characteristics, that inhibit effective product/water separation and monitoring.

(1298) (g) Sections 157.11 (a) through (f), 157.12, 157.13, 157.15, and 157.23 do not apply to a tank barge that cannot ballast cargo tanks or wash cargo tanks while underway.

(1299) (h) Sections 157.19 and 157.21 do not apply to a tank barge that is certificated by the Coast Guard for limited short protected coastwise routes if the barge is otherwise constructed and certificated for service exclusively on inland routes.

(1300) (i) Section 157.09(d) does not apply to any:

(1301) (1) U.S. vessel in domestic trade that is constructed under a contract awarded before January 8, 1976;

(1302) (2) U.S. vessel in foreign trade that is constructed under a contract awarded before April 1, 1977; or

(1303) (3) Foreign vessel that is constructed under a contract awarded before April 1, 1977.

(1304) (j) Sections 157.09 and 157.10a do not apply to a new vessel that:

(1305) (1) Is constructed under a building contract awarded after June 1, 1979;

(1306) (2) In the absence of a building contract, has the keel laid or is at a similar stage of construction after January 1, 1980;

(1307) (3) Is delivered after June 1, 1982; or

(1308) (4) Has undergone a major conversion for which:

(1309) (i) The contract is awarded after June 1, 1979;

(1310) (ii) In the absence of a contract, conversion is begun after January 1, 1980; or

(1311) (iii) Conversion is completed after June 1, 1982.

(1312) (k) Sections 157.09(b)(3), 157.10(c)(3), 157.10a(d)(3), and 157.10b(b)(3) do not apply to tank barges.

(1313) (1) Section 157.10b does not apply to tank barges if they do not carry ballast while they are engaged in trade involving the transfer of crude oil from an offshore oil exploitation or production facility on the Outer Continental Shelf of the United States.

(1314) (m) Section 157.12 does not apply to a U.S. vessel that:

(1315) (1) Is granted an exemption under Subpart F of this part; or

(1316) (2) Is engaged solely in voyages that are:

(1317) (i) Between ports or places within the United States, its territories or possessions;

(1318) (ii) Of less than 72 hours in length; and

(1319) (iii) At all times within 50 nautical miles of the nearest land.

(1320) (n) Section 157.10d does not apply to:

(1321) (1) A vessel that operates exclusively beyond the navigable waters of the United States and the United States Exclusive Economic Zone, as defined in 33 U.S.C. 2701(8);

(1322) (2) An oil spill response vessel;

(1323) (3) Before January 1, 2015–

(1324) (i) A vessel unloading oil in bulk as cargo at a deepwater port licensed under the Deepwater Port Act of 1974 (33 U.S.C. 1501 et seq.); or

(1325) (ii) A delivering vessel that is offloading oil in bulk as cargo in lightering activities–

(1326) (A) Within a lightering zone established under 46 U.S.C. 3715(b)(5); and

(1327) (B) More than 60 miles from the territorial sea base line, as defined in 33 CFR 2.20.

(1328) (4) A vessel documented under 46 U.S.C., Chapter 121, that was equipped with a double hull before August 12, 1992;

(1329) (5) A barge of less than 1,500 gross tons as measured under 46 U.S.C., Chapter 145, carrying refined petroleum in bulk as cargo in or adjacent to waters of the Bering Sea, Chukchi Sea, and Arctic Ocean and waters tributary thereto and in the waters of the Aleutian Islands and the Alaskan Peninsula west of 155 degrees west longitude; or

(1330) (6) A vessel in the National Defense Reserve Fleet pursuant to 50 App. U.S.C. 1744.

**§157.10d Double hulls on tank vessels.**

(1331) (a) With the exceptions stated in §157.08(n), this section applies to a tank vessel–

(1332) (1) For which the building contract is awarded after June 30, 1990; or

(1333) (2) That is delivered after December 31, 1993;

(1334) (3) That undergoes a major conversion for which;

(1335) (i) The contract is awarded after June 30, 1990; or

(1336) (ii) Conversion is completed after December 31, 1993; or

(1337) (4) That is otherwise required to have a double hull by 46 U.S.C. 3703a(c).

(1338) NOTE: 46 U.S.C. 3703a(c) is shown in appendix G to this part.

(1339) (b) Each vessel to which this section applies must be fitted with:

(1340) (1) A double hull in accordance with this section; and

(1341) (2) If §157.10 applies, segregated ballast tanks and a crude oil washing system in accordance with that section.

(1342) (c) Except on a vessel to which §157.10d(d) applies, tanks within the cargo tank length that carry any oil must be protected by double sides and a double bottom as follows:

(1343) (1) Double sides must extend for the full depth of the vessel's side or from the uppermost deck, disregarding a rounded gunwale where fitted, to the top of the double bottom. At any cross section, the molded width of the double side, measured at right angles to the side shell plating, from the side of tanks containing oil to the side shell plating, must not be less than the distance w as shown in Figure 157.10d(c) and specified as follows:

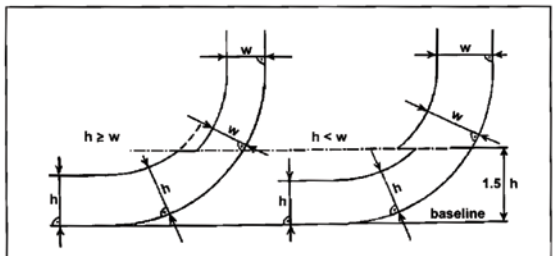



Figure 157.10d(c) Minimum Double Hull Dimensions

(1344) (i) For a vessel of 5,000 DWT and above: w=[0.5+(DWT/20,000)] meters; or, w=2.0 meters (79 in.), whichever is less, but in no case less than 1.0 meter (39 in.).

(1345) (ii) For a vessel of less than 5,000 DWT: w=[0.4+(2.4)(DWT/20,000)] meters, but in no case less than 0.76 meter (30 in.).

(1346) (iii) For a vessel to which Paragraph (a)(4) of this section applies: w=0.76 meter (30 in.), provided that the double side was fitted under a construction or conversion contract awarded prior to June 30, 1990.

(1347) (2) At any cross section, the molded depth of the double bottom, measured at right angles to the bottom shell plating, from the bottom of tanks containing oil to the bottom shell plating, must not be less than the distance h as shown in Figure 157.10d(c) and specified as follows:

(1348) (i) For a vessel of 5,000 DWT and above: h=B/15; or, h=2.0 meters (79 in.), whichever is less, but in no case less than 1.0 meter (39 in.).

(1349) (ii) For a vessel of less than 5,000 DWT: h=B/15, but in no case less than 0.76 meter (30 in.).

(1350) (iii) For a vessel to which Paragraph (a)(4) of this section applies: h=B/15; or, h=2.0 meters (79 in.), whichever is the lesser, but in no case less than 0.76 meter (30 in.), provided that the double bottom was fitted under a construction or conversion contract awarded prior to June 30, 1990.

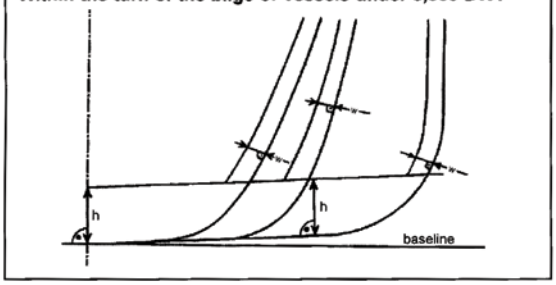
(1351) (3) For a vessel built under a contract awarded after September 11, 1992, within the turn of the bilge or at cross sections where the turn of the bilge is not clearly defined, tanks containing oil must be located inboard of the outer shell–

(1352) (i) For a vessel of 5,000 DWT and above: At levels up to 1.5h above the base line, not less than the distance h, as shown in Figure 157.10d(c) and specified in Paragraph (c)(2) of this section. At levels greater than 1.5h above the base line, not less than the distance w, as shown in Figure 157.10d(c) and specified in Paragraph (c)(1) of this section.

(1353) (ii) For a vessel of less than 5,000 DWT: Not less the distance h above the line of the mid-ship flat bottom, as shown in Figure 157.10d(c)(3)(ii) and specified in

Paragraph (c)(2) of this section. At levels greater than h above the line of the mid-ship flat bottom, not less than the distance w, as shown in Figure 157.10d(c)(3)(ii) and specified in Paragraph (c)(1) of this section.

Figure 157.10d(c)(3)(ii) - Minimum Double Hull Dimensions Within the turn of the bilge of Vessels under 5,000 DWT




(1354) (4) For a vessel to which §157.10(b) applies that is built under a contract awarded after September 11, 1992.

(1355) (i) The aggregate volume of the double sides, double bottom, forepeak tanks, and afterpeak tanks must not be less than the capacity of segregated ballast tanks required under §157.10(b). Segregated ballast tanks that may be provided in addition to those required under §157.10(b) may be located anywhere within the vessel.

(1356) (ii) Double side and double bottom tanks used to meet the requirements of §157.10(b) must be located as uniformly as practicable along the cargo tank length. Large inboard extensions of individual double side and double bottom tanks, which result in a reduction of overall side or bottom protection, must be avoided.

(1357) (d) A vessel of less than 10,000 DWT that is constructed and certificated for service exclusively on inland or limited short protected coastwise routes must be fitted with double sides and a double bottom as follows:

(1358) (1) A minimum of 61 cm. (2 ft.) from the inboard side of the side shell plate, extending the full depth of the side or from the main deck to the top of the double bottom, measured at right angles to the side shell; and

(1359) (2) A minimum of 61 cm. (2 ft.) from the top of the bottom shell plating, along the full breadth of the vessel's bottom, measured at right angles to the bottom shell.

(1360) (3) For a vessel to which Paragraph (a)(4) of this section applies, the width of the double sides and the depth of the double bottom may be 38 cm. (15 in.), in lieu of the dimensions specified in paragraphs (d)(1) and (d)(2) of this section, provided that the double side and double bottom tanks were fitted under a construction or conversion contract awarded prior to June 30, 1990.

(1361) (4) For a vessel built under a contract awarded after September 11, 1992, a minimum 46 cm. (18 in.) clearance for passage between framing must be maintained throughout the double sides and double bottom.

(1362) (e) Except as provided in Paragraph (e)(3) of this section, a vessel must not carry any oil in any tank extending forward of:

(1363) (1) The collision bulkhead; or

(1364) (2) In the absence of a collision bulk-head, the transverse plane perpendicular to the centerline through a point located:

(1365) (i) The lesser of 10 meters (32.8 ft.) or 5 percent of the vessel length, but in no case less than 1 meter (39 in.), aft of the forwarded perpendicular;

(1366) (ii) On a vessel of less than 10,000 DWT tons that is constructed and certificated for service exclusively on inland or limited short protected coastwise routes, the lesser of 7.62 meters (25 ft.) or 5 percent of the vessel length, but in no case less than 61 cm. (2 ft.), aft of the headlog or stem at the freeboard deck; or

(1367) (iii) On each vessel which operates exclusively as a box or trail barge, 61 cm. (2 ft.) aft of the headlog.

(1368) (3) This Paragraph does not apply to independent fuel oil tanks that must be located on or above the main deck within the areas described in paragraphs (e)(1) and (e)(2) of this section to serve adjacent deck equipment that cannot be located further aft. Such tanks must be as small and as far aft as is practicable.

(1369) (f) On each vessel, the cargo tank length must not extend aft to any point closer to the stern than the distance equal to the required width of the double side, as prescribed in §157.10d(c)(1) or §157.10d(d)(1).

## Subpart G–Interim Measures for Certain Tank Vessels Without Double Hulls Carrying Petroleum Oils

### §157.400 Purpose and applicability.

(1370) (a) The purpose of this subpart is to establish mandatory safety and operational requirements to reduce environmental damage resulting from petroleum oil spills.

(1371) (b) This subpart applies to each tank vessels specified in §157.01 of this part that–

(1372) (1) Is 5,000 gross tons or more;

(1373) (2) Carries petroleum oil in bulk as cargo or oil cargo residue; and

(1374) (3) Is not equipped with a double hull meeting §157.10d of this part, or an equivalent to the requirements of §157.10d, but required to be equipped with a double hull at a date set forth in 46 U.S.C. 3703a (b)(3) and (c)(3).

### §157.445 Maneuvering performance capability.

(1375) (a) A tankship owner or operator shall ensure that maneuvering tests in accordance with IMO Resolution A.751(18), sections 1.2, 2.3-2.4, 3-4.2, and 5 (with Explanatory Notes in MSC/Circ. 644) have been conducted by July 29, 1997. Completion of maneuvering performance tests must be shown by–

(1376) (1) For a foreign flag tankship, a letter from the flag administration or an authorized classification society, as described in §157.04 of this part, stating the requirements in Paragraph (a) of this section have been met; or

(1377) (2) For a U.S. flag tankship, results from the vessel owner confirming the completion of the tests or a letter from an authorized classification society, as described in §157.04 of this part, stating the requirements in Paragraph (a) of this section have been met.

(1378) (b) If a tankship undergoes a major conversion or alteration affecting the control systems, control surfaces, propulsion system, or other areas which may be expected to alter maneuvering performance, the tankship owner or operator shall ensure that new maneuvering tests are conducted as required by Paragraph (a) of this section.

(1379) (c) If a tankship is one of a class of vessels with identical propulsion, steering, hydrodynamic, and other relevant design characteristics, maneuvering performance test results for any tankship in the class may be used to satisfy the requirements of Paragraph (a) of this section.

(1380) (d) The tankship owner or operator shall ensure that the performance test results, recorded in the format of Appendix 6 of the Explanatory Notes in MSC/Circ. 644., are prominently displayed in the wheelhouse.

(1381) (e) Prior to entering the port or place of destination and prior to getting underway, the tankship master shall discuss the results of the performance tests with the pilot while reviewing the anticipated transit and the possible impact of the tankship's maneuvering capability on the transit.

## Part 160–Ports and Waterways Safety-General

## Subpart A–General

### §160.1 Purpose.

(1382) (a) This subchapter contains regulations implementing the Ports and Waterway Safety Act (33 U.S.C. 1221) and related statutes.

### §160.3 Definitions.

(1383) For the purposes of this subchapter:

(1384) Bulk means material in any quantity that is shipped, stored, or handled without the benefit of package, label, mark or count and carried in integral or fixed independent tanks.

(1385) Captain of the Port means the Coast Guard officer designated by the Commandant to command a Captain of the Port Zone as described in part 3 of this chapter.

(1386) Commandant means the Commandant of the United States Coast Guard.

(1387) Deviation means any departure from any rule in this subchapter.

(1388) Director, Vessel Traffic Services means the Coast Guard officer designated by the Commandant to command a Vessel Traffic Service (VTS) as described in part 161 of this chapter.

(1389) District Commander means the Coast Guard officer designated by the Commandant to command a Coast Guard District as described in part 3 of this chapter.

(1390) ETA means estimated time of arrival.

(1391) Length of Tow means, when towing with a hawser, the length in feet from the stern of the towing vessel to the stern of the last vessel in tow. When pushing ahead or towing alongside, length of tow means the tandem length in feet of the vessels in tow excluding the length of the towing vessel.

(1392) Person means an individual, firm, corporation, association, partnership, or governmental entity.

(1393) State means each of the several States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Trust Territories of the Pacific Islands, the Commonwealth of the Northern Marianas Islands, and any other commonwealth, territory, or possession of the United States.

(1394) Tanker means a self-propelled tank vessel constructed or adapted primarily to carry oil or hazardous materials in bulk in the cargo spaces.

(1395) Tank Vessel means a vessel that is constructed or adapted to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue.

(1396) Vehicle means every type of conveyance capable of being used as a means of transportation on land.

(1397) Vessel means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.

(1398) Vessel Traffic Services (VTS) means a service implemented under Part 161 of this chapter by the United States Coast Guard designed to improve the safety and efficiency of vessel traffic and to protect the environment. The VTS has the capability to interact with marine traffic and respond to traffic situations developing in the VTS area.

(1399) Vessel Traffic Service Area or VTS Area means the geographical area encompassing a specific VTS area of service as described in Part 161 of this chapter. This area of service may be subdivided into sectors for the purpose of allocating responsibility to individual Vessel Traffic Centers or to identify different operating requirements.

(1400) **Note:** Although regulatory jurisdiction is limited to the navigable waters of the United States, certain vessels will be encouraged or may be required, as a condition of port entry, to report beyond this area to facilitate traffic management within the VTS area.

(1401) VTS Special Area means a waterway within a VTS area in which special operating requirements apply.

### §160.5 Delegations.

(1402) (a) District Commanders and Captains of the Ports are delegated the authority to establish safety zones.

(1403) (b) Under the provisions of 33 CFR 6.04–1 and 6.04–6, District Commanders and Captains of the Ports have been delegated authority to establish security zones.

(1404) (c) Under the provisions 33 CFR §1.05–1, District Commanders have been delegated authority to establish regulated navigation areas.

(1405) (d) Subject to the supervision of the cognizant Captain of the Port and District Commander, Directors, Vessel Traffic Services are delegated authority under 33 CFR 1.01-30 to discharge the duties of the Captain of the Port that involve directing the operation, movement, and anchorage of vessels within a Vessel Traffic Service area including management of vessel traffic within anchorages, regulated navigation areas and safety zones, and to enforce Vessel Traffic Service and ports and waterways safety regulations. This authority may be exercised by Vessel Traffic Center personnel. The Vessel Traffic Center may, within the Vessel Traffic Service area, provide information, make recommendations, or, to a vessel required under Part 161 of this chapter to participate in a Vessel Traffic Service, issue an order, including an order to operate or anchor as directed; require the vessel to comply with orders issued; specify times of entry, movement or departure; restrict operations as necessary for safe operation under the circumstances; or take other action necessary for control of the vessel and the safety of the port or of the marine environment.

**§160.7 Appeals.**

(1406) (a) Any person directly affected by a safety zone or an order or direction issued under this subchapter (33 CFR Subchapter P) may request reconsideration by the official who issued it or in whose name it was issued. This request may be made orally or in writing, and the decision of the official receiving the request may be rendered orally or in writing.

(1407) (b) Any person directly affected by the establishment of a safety zone or by an order or direction issued by, or on behalf of, a Captain of the Port may appeal to the District Commander through the Captain of the Port. The appeal must be in writing, except as allowed under paragraph (e) of this section, and shall contain complete supporting documentation and evidence which the appellant wishes to have considered. Upon receipt of the appeal, the District Commander may direct a representative to gather and submit documentation or other evidence which would be necessary or helpful to a resolution of the appeal. A copy of this documentation and evidence is made available to the appellant. The appellant is afforded five working days from the date of receipt to submit rebuttal materials. Following submission of all materials, the District Commander issues a ruling, in writing, on the appeal. Prior to issuing the ruling, the District Commander may, as a matter of discretion, allow oral presentation on the issues.

(1408) (c) Any person directly affected by the establishment of a safety zone or by an order or direction issued by, or on behalf of, a District Commander, or who receives an unfavorable ruling on an appeal taken under paragraph (b) of this section may appeal to the Area Commander through the District Commander. The appeal must be in writing, except as allowed under paragraph (e) of this section, and shall contain complete supporting documentation and evidence which the appellant wishes to have considered. Upon receipt of the appeal, the Area Commander may direct a representative to gather and submit documentation or other evidence which would be necessary or helpful to a resolution of the appeal. A copy of this documentation and evidence is made available to the appellant. The appellant is afforded five working days from the date of receipt to submit rebuttal materials. Following submission of all materials, the Area Commander issues a ruling, in writing, on the appeal. Prior to issuing the ruling, the Area Commander may, as a matter of discretion, allow oral presentation on the issues.

(1409) (d) Any person who receives an unfavorable ruling on an appeal taken under paragraph (c) of this section, may appeal through the Area Commander to the Assistant Commandant for Marine Safety, Security and Stewardship, U.S. Coast Guard, (CG-5), 2100 2nd St. SW., Stop 7363, Washington, DC 20593-7363. The appeal must be in writing, except as allowed under paragraph (e) of this section. The Area Commander forwards the appeal, all the documents and evidence which formed the record upon which the order or direction was issued or the ruling under paragraph (c) of this section was made, and any comments which might be relevant, to the Assistant Commandant for Marine Safety, Security and Stewardship. A copy of this documentation and evidence is made available to the appellant. The appellant is afforded five working days from the date of receipt to submit rebuttal materials to the Assistant Commandant for Marine Safety, Security and Stewardship. The decision of the Assistant Commandant for Marine Safety, Security and Stewardship is based upon the materials submitted, without oral argument or presentation. The decision of the Assistant Commandant for Marine Safety, Security and Stewardship is based upon the materials submitted, without oral argument or presentation. The decision of the Assistant Commandant for Prevention is issued in writing and constitutes final agency action.

(1410) (e) If the delay in presenting a written appeal would have significant adverse impact on the appellant, the appeal under paragraphs (b) and (c) of this section may initially be presented orally. If an initial presentation of the appeal is made orally, the appellant must submit the appeal in writing within five days of the oral presentation to the Coast Guard official to whom the presentation was made. The written appeal must contain, at a minimum, the basis for the appeal and a summary of the material presented orally. If requested, the official to whom the appeal is directed may stay the effect of the action while the ruling is being appealed.

## Table 160.206 – NOA Information Items

| Required Information | Vessels Not Carrying CDC | Vessels Carrying CDC | |
|---|---|---|---|
| | | Vessels | Towing Vessels Controlling Vessels Carrying CDC |
| **(1) Vessel Information** | | | |
| (i) Name | X | X | X |
| (ii) Name of the registered owner | X | X | X |
| (iii) Country of registry | X | X | X |
| (iv) Call sign | X | X | X |
| (v) International Maritime Organization (IMO) international number or, if vessel does not have an assigned IMO international number, substitute with official number | X | X | X |
| (vi) Name of the operator | X | X | X |
| (vii) Name of the charterer | X | X | X |
| (viii) Name of classification society | X | X | X |
| **(2) Voyage Information** | | | |
| (i) Names of last five ports or places visited | X | X | X |
| (ii) Dates of arrival and departure for last five ports or places visited | X | X | X |
| (iii) For each port or place in the United States to be visited list the names of the receiving facility, the port or place, the city, and the state | X | X | X |
| (iv) For each port or place in the United States to be visited, the estimated date and time of arrival | X | X | X |
| (v) For each port or place in the United States to be visited, the estimated date and time of departure | X | X | X |
| (vi) The location (port or place and country) or position (latitude and longitude or waterway and mile marker) of the vessel at the time of reporting | X | X | X |
| (vii) The name and telephone number of a 24-hour point of contact | X | X | X |
| **(3) Cargo Information** | | | |
| (i) A general description of cargo, other than CDC, onboard the vessel (e.g. grain, container, oil, etc.) | X | X | X |
| (ii) Name of each certain dangerous cargo carried, including cargo UN number, if applicable | | X | X |
| (iii) Amount of each certain dangerous cargo carried | | X | X |
| **(4) Information for each crewmember onboard** | | | |
| (i) Full name | X | X | X |
| (ii) Date of birth | X | X | X |
| (iii) Nationalitiy | X | X | X |
| (iv) Passport or mariners document number (type of identification and number) | X | X | X |
| (v) Position or duties on the vessel | X | X | X |
| (vi) Where the crewmembers embarked (list port or place and country) | X | X | X |
| **(5) Information for each person onboard in addition to crew** | | | |
| (i) Full name | X | X | X |
| (ii) Date of birth | X | X | X |
| (iii) Nationality | X | X | X |
| (iv) Passport number | X | X | X |
| (v) Where the person embarked (list port or place and country) | X | X | X |
| **(6) Operational condition of equipment required by §164.35 of this chapter** | X | X | X |
| **(7) International Safety Management (ISM) Code Notice** | | | |
| (i) The date of issuance for the company's Document of Compliance certificate that covers the vessel | X | X | X |
| (ii) The date of issuance for the vessel's Safety Management Certificate | X | X | X |
| (iii) The name of the Flag Administration, or the recognized organization(s) representing the vessel flag administration, that issued those certificates | X | X | X |
| **(8) Cargo Declaration (Customs Form 1302) as described in 19 CFR 4.7** | X | X | X |
| **(9) International Ship and Port Facility Code (ISPS) Notice*** | | | |
| (i) The date of issuance for the vessel's International Ship Security Certificate (ISSC), if any | X | X | X |
| (ii) Whether the ISSC, if any, is an initial Interim ISSC, subsequent and consecutive Interim ISSC, or final ISSC | X | X | X |
| (iii) Declaration that the approved ship security plan, if any, is being implemented | X | X | X |
| (iv) If a subsequent and consecutive Interim ISSC, the reasons therefor | X | X | X |
| (v) The name and 24-hour contact information for the Company Security Officer | X | X | X |
| (vi) The name of the Flag Administration, or the recognized security organization(s) representing the vessel flag Administration that issued the ISSC | X | X | X |

* The information required by items 9(i)-(iii) need not be submitted before January 1, 2004. All other information required by item 9 need not be submitted before July 1, 2004.

## Subpart B–Control of Vessel and Facility Operations

### §160.101 Purpose.

(1411) This subpart describes the authority exercised by District Commanders and Captains of the Ports to insure the safety of vessels and waterfront facilities, and the protection of the navigable waters and the resources therein. The controls described in this subpart are directed to specific situations and hazards.

### §160.103 Applicability.

(1412) (a) This subpart applies to any-

(1413) (1) Vessel on the navigable waters of the United States, except as provided in paragraphs (b) and (c) of this section;

(1414) (2) Bridge or other structure on or in the navigable waters of the United States; and

(1415) (3) Land structure or shore area immediately adjacent to the navigable waters of the United States.

(1416) (b) This subpart does not apply to any vessel on the Saint Lawrence Seaway.

(1417) (c) Except pursuant to international treaty, convention, or agreement, to which the United States is a party, this subpart does not apply to any foreign vessel that is not destined for, or departing from, a port or place subject to the jurisdiction of the United States and that is in–

(1418) (1) Innocent passage through the territorial sea of the United States;

(1419) (2) Transit through the navigable waters of the United States which form a part of an international strait.

### §160.105 Compliance with orders.

(1420) Each person who has notice of the terms of an order issued under this subpart must comply with that order.

### §160.107 Denial of entry.

(1421) Each District Commander or Captain of the Port, subject to recognized principles of international law, may deny entry into the navigable waters of the United States or to any port or place under the jurisdiction of the United States, and within the district or zone of that District Commander or Captain of the Port, to any vessel not in compliance with the provisions of the Port and Tanker Safety Act (33 U.S.C. 1221-1232) or the regulations issued thereunder.

### §160.109 Waterfront facility safety.

(1422) (a) To prevent damage to, or destruction of, any bridge or other structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to those waters, and to protect the navigable waters and the resources therein from harm resulting from vessel or structure damage, destruction, or loss, each District Commander or Captain of the Port may–

(1423) (1) Direct the handling, loading, unloading, storage, stowage, and movement (including the emergency removal, control, and disposition) of explosives or other dangerous articles and substances, including oil or hazardous material as those terms are defined in 46 (U.S.C. 2101) on any structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to those waters; and

(1424) (2) Conduct examinations to assure compliance with the safety equipment requirements for structures.

### §160.111 Special orders applying to vessel operations.

(1425) Each District Commander or Captain of the Port may order a vessel to operate or anchor in the manner directed when–

(1426) (a) The District Commander or Captain of the Port has reasonable cause to believe that the vessel is not in compliance with any regulation, law or treaty;

(1427) (b) The District Commander or Captain of the Port determines that the vessel does not satisfy the conditions for vessel operation and cargo transfers specified in §160.113; or

(1428) (c) The District Commander or Captain of the Port has determined that such order is justified in the interest of safety by reason of weather, visibility, sea conditions, temporary port congestion, other temporary hazardous circumstances, or the condition of the vessel.

### §160.113 Prohibition of vessel operation and cargo transfers.

(1429) (a) Each District Commander or Captain of the Port may prohibit any vessels subject to the provisions of chapter 37 of Title 46, U.S. Code from operating in the navigable waters of the United States, or from transferring cargo or residue in any port or place under the jurisdiction of the United States, and within the district or zone of that District Commander or Captain of the Port, if the District Commander or the Captain of the Port determines that the vessel's history of accidents, pollution incidents, or serious repair problems creates reason to believe that the vessel may be unsafe or pose a threat to the marine environment.

(1430) (b) The authority to issue orders prohibiting operation of the vessels or transfer of cargo or residue under paragraph (a) of this section also applies if the vessel:

(1431) (1) Fails to comply with any applicable regulation;

(1432) (2) Discharges oil or hazardous material in violation of any law or treaty of the United States;

(1433) (3) Does not comply with applicable vessel traffic service requirements;

(1434) (4) While underway, does not have at least one deck officer on the navigation bridge who is capable of communicating in the English language.

(1435) (c) When a vessel has been prohibited from operating in the navigable waters of the United States under

paragraphs (a) or (b) of this section, the District Commander or Captain of the Port may allow provisional entry into the navigable waters of the United States, or into any port or place under the jurisdiction of the United States and within the district or zone of that District Commander or Captain of the Port, if the owner or operator of such vessel proves to the satisfaction of the District Commander or Captain of the Port, that the vessel is not unsafe or does not pose a threat to the marine environment, and that such entry is necessary for the safety of the vessel or the persons on board.

(1436) (d) A vessel which has been prohibited from operating in the navigable waters of the United States, or from transferring cargo or residue in a port or place under the jurisdiction of the United States under the provisions of paragraph (a) or (b)(1), (2) or (3) of this section, may be allowed provisional entry if the owner or operator proves, to the satisfaction of the District Commander or Captain of the Port that has jurisdiction, that the vessel is no longer unsafe or a threat to the environment, and that the condition which gave rise to the prohibition no longer exists.

### §160.115 Withholding of clearance.

(1437) (a) Each District Commander or Captain of the Port may request the Secretary of the Treasury, or the authorized representative thereof, to withhold or revoke the clearance required by 46 U.S.C. App. 91 of any vessel, the owner or operator of which is subject to any penalties under 33 U.S.C. 1232.

## Subpart C–Notification of Arrival, Hazardous Conditions, and Certain Dangerous Cargos

### §160.201 General.

(1438) This subpart contains requirements and procedures for submitting Notices of Arrival (NOA) and Notice of Hazardous Condition. The sections in this subpart describe:

(1439) (a) Applicability and exemptions from requirements in this subpart;

(1440) (b) Required information in an NOA;

(1441) (c) Required changes to an NOA;

(1442) (d) Methods and times for submission of an NOA and changes to an NOA;

(1443) (e) How to obtain a waiver; and

(1444) (f) Requirements for submission of the Notice of Hazardous Conditions.

### §160.202 Applicability.

(1445) (a) This subpart applies to U.S. and foreign vessels bound for or departing from ports or places in the United States.

(1446) (b) This subpart does not apply to recreational vessels under 46 U.S.C. 4301 et seq.

(1447) (c) Unless otherwise specified in this subpart, the owner, agent, master, operator, or person in charge of a vessel regulated by this subpart is responsible for compliance with the requirements in this subpart.

(1448) (d) Towing vessels controlling a barge or barges required to submit an NOA under this subpart must submit only one NOA containing the information required for the towing vessel and each barge under its control.

### §160.203 Exemptions.

(1449) (a) Except for reporting notice of hazardous conditions, the following vessels are exempt from requirements in this subpart:

(1450) (1) Passenger and supply vessels when they are employed in the exploration for or in the removal of oil, gas, or mineral resources on the continental shelf.

(1451) (2) Oil Spill Recovery Vessels (OSRVs) when engaged in actual spill response operations or during spill response exercises.

(1452) (3) Vessels operating upon the following waters:

(1453) (i) Mississippi River between its sources and mile 235, Above Head of Passes;

(1454) (ii) Tributaries emptying into the Mississippi River above mile 235;

(1455) (iii) Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway and the Red River; and

(1456) (iv) The Tennessee River from its confluence with the Ohio River to mile zero on the Mobile River and all other tributaries between those two points.

(1457) (b) If not carrying certain dangerous cargo or controlling another vessel carrying certain dangerous cargo, the following vessels are exempt from NOA requirements in this subpart:

(1458) (1) Vessels 300 gross tons or less, except for foreign vessels entering any port or place in the Seventh Coast Guard District as described in 33 CFR 3.35–1(b).

(1459) (2) Vessels operating exclusively within a Captain of the Port Zone.

(1460) (3) Vessels arriving at a port or place under force majeure.

(1461) (4) Towing vessels and barges operating solely between ports or places in the continental United States.

(1462) (5) Public vessels.

(1463) (6) Except for tank vessels, U.S. vessels operating solely between ports or places in the United States on the Great Lakes.

(1464) (c) Vessels less than 500 gross tons need not submit the International Safety Management (ISM) Code Notice (Entry (7) to Table 160.206).

(1465) (d) [Suspended]

(1466) (e) [Suspended]

(1467) (f) U.S. vessels need not submit the International Ship and Port Facility Code (ISPS) Notice information (Entry (9) to Table 160.206).

**§160.204 Definitions.**

(1468) As used in this subpart:

(1469) Agent means any person, partnership, firm, company or corporation engaged by the owner or charterer of a vessel to act in their behalf in matters concerning the vessel.

(1470) Barge means a non-self propelled vessel engaged in commerce.

(1471) Carried in bulk means a commodity that is loaded or carried on board a vessel without containers or labels and received and handled without mark or count.

(1472) Certain dangerous cargo (CDC) includes any of the following:

(1473) (1) Division 1.1 or 1.2 explosives as defined in 49 CFR 173.50.

(1474) (2) Division 1.5D blasting agents for which a permit is required under 49 CFR 176.415 or, for which a permit is required as a condition of a Research and Special Programs Administration exemption.

(1475) (3) Division 2.3 "poisonous gas", as listed in 49 CFR 172.101 that is also a "material poisonous by inhalation" as defined in 49 CFR 171.8, and that is in a quantity in excess of 1 metric ton per vessel.

(1476) (4) Division 5.1 oxidizing materials for which a permit is required under 49 CFR 176.415 or for which a permit is required as a condition of a Research and Special Programs Administration exemption.

(1477) (5) A liquid material that has a primary or subsidiary classification of Division 6.1 "poisonous material" as listed 49 CFR 172.101 that is also a "material poisonous by inhalation," as defined in 49 CFR 171.8 and that is in a bulk packaging, or that is in a quantity in excess of 20 metric tons per vessel when not in a bulk packaging.

(1478) (6) Class 7, "highway route controlled quantity" radioactive material or "fissile material, controlled shipment," as defined in 49 CFR 173.403.

(1479) (7) All bulk liquefied gas cargo carried under 46 CFR 151.50-31 or listed in 46 CFR 154.7 that is flammable and/or toxic and that is not carried as certain dangerous cargo residue (CDC residue).

(1480) (8) The following bulk liquids except when carried as CDC residue:

(1481) (i) Acetone cyanohydrin;

(1482) (ii) Allyl alcohol;

(1483) (iii) Chlorosulfonic acid;

(1484) (iv) Crotonaldehyde;

(1485) (v) Ethylene chlorohydrin;

(1486) (vi) Ethylene dibromide;

(1487) (vii) Methacrylonitrile;

(1488) (viii) Oleum (fuming sulfuric acid); and

(1489) (ix) Propylene oxide, alone or mixed with ethylene oxide.

(1490) (9) The following bulk solids:

(1491) (i) Ammonium nitrate listed as Division 5.1 (oxidizing) material in 49 CFR 172.101 except when carried as CDC residue; and

(1492) (ii) Ammonium nitrate based fertilizer listed as a Division 5.1 (oxidizing) material in 49 CFR 172.101 except when carried as CDC residue.

(1493) Certain dangerous cargo residue (CDC residue) includes any of the following:

(1494) (1) Ammonium nitrate in bulk or ammonium nitrate based fertilizer in bulk remaining after all saleable cargo is discharged, not exceeding 1,000 pounds in total and not individually accumulated in quantities exceeding two cubic feet.

(1495) (2) For bulk liquids and liquefied gases, the cargo that remains onboard in a cargo system after discharge that is not accessible through normal transfer procedures, with the exception of the following bulk liquefied gas cargoes carried under 46 CFR 151.50-31 or listed in 46 CFR 154.7:

(1496) (i) Ammonia, anhydrous;

(1497) (ii) Chlorine;

(1498) (iii) Ethane;

(1499) (iv) Ethylene oxide;

(1500) (v) Methane (LNG);

(1501) (vi) Methyl bromide;

(1502) (vii) Sulfur dioxide; and

(1503) (viii) Vinyl chloride.

(1504) Charterer means the person or organization that contracts for the majority of the carrying capacity of a ship for the transportation of cargo to a stated port for a specified period. This includes "time charterers" and "voyage charterers."

(1505) Crewmember means all persons carried on board the vessel to provide navigation and maintenance of the vessel, its machinery, systems, and arrangements essential for propulsion and safe navigation or to provide services for other persons on board.

(1506) Great Lakes means Lakes Superior, Michigan, Huron, Erie, and Ontario, their connecting and tributary waters, the Saint Lawrence River as far as Saint Regis, and adjacent port areas.

(1507) Gross tons means the tonnage determined by the tonnage authorities of a vessel's flag state in accordance with the national tonnage rules in force before the entry into force of the International Convention on Tonnage Measurement of Ships, 1969 ("Convention"). For a vessel measured only under Annex I of the Convention, gross tons means that tonnage. For a vessel measured under both systems, the higher gross tonnage is the tonnage used for the purposes of the 300-gross-ton threshold.

(1508) Hazardous condition means any condition that may adversely affect the safety of any vessel, bridge, structure, or shore area or the environmental quality of any port, harbor, or navigable waterway of the United States. It may, but need not, involve collision, allision, fire, explosion, grounding, leaking, damage, injury or illness of a person aboard, or manning-shortage.

(1509) Nationality means the state (nation) in which a person is a citizen or to which a person owes permanent allegiance.

(1510) Operator means any person including, but not limited to, an owner, a charterer, or another contractor who conducts, or is responsible for, the operation of a vessel.

(1511) Persons in addition to crewmembers mean any person onboard the vessel, including passengers, who are not included on the list of crewmembers.

(1512) Port or place of departure means any port or place in which a vessel is anchored or moored.

(1513) Port or place of destination means any port or place in which a vessel is bound to anchor or moor.

(1514) Public vessel means a vessel that is owned or demise-(bareboat) chartered by the government of the United States, by a State or local government, or by the government of a foreign country and that is not engaged in commercial service.

(1515) Time charterer means the party who hires a vessel for a specific amount of time. The owner and his crew manage the vessel, but the charterer selects the ports of destination.

(1516) Voyage charterer means the party who hires a vessel for a single voyage. The owner and his crew manage the vessel, but the charterer selects the ports of destination.

**§160.206 Information required in an NOA.**

(1517) (a) Each NOA must contain all of the information items specified in Table 160.206.

(1518) (b) Vessels operating solely between ports or places in the continental United States need submit only the name of and date of arrival and departure for the last port or places visited to meet the requirements in entries (2)(i) and (ii) to Table 160.206 of this section.

(1519) (c) You may submit a copy of INS Form I–418 to meet the requirements of entries (4) and (5) in Table 160.206.

(1520) (d) Any vessel planning to enter two or more consecutive ports or places in the United States during a single voyage may submit one consolidated Notification of Arrival at least 96 hours before entering the first port or place of destination. The consolidated notice must include the name of the port or place and estimated arrival and departure date for each destination of the voyage. Any vessel submitting a consolidated notice under this section must still meet the requirements of §160.208 of this part concerning requirements for charges to an NOA.

**§160.208 Changes to a submitted NOA.**

(1521) (a) Unless otherwise specified in this section, when submitted NOA information changes, vessels must submit a notice of change within the times required in §160.212.

(1522) (b) Changes in the following information need not be reported:

(1523) (1) Changes in arrival or departure times that are less than six (6) hours;

(1524) (2) Changes in vessel location or position of the vessel at the time of reporting (entry (2)(vi) to Table 160.206); and

(1525) (3) Changes to crewmembers' position or duties on the vessel (entry (5)(v) to Table 160.206).

(1526) (c) When reporting changes, submit only the name of the vessel, original NOA submission date, the port of arrival, the specific items to be corrected, and the new location or position of the vessel at the time of reporting. Only changes to NOA information need to be submitted.

**§160.210 Methods for submitting an NOA.**

(1527) (a) [Suspended]

(1528) (b) Saint Lawrence Seaway transits. Those vessels transiting the Saint Lawrence Seaway inbound, bound for a port or place in the United States, may meet the submission requirements of paragraph (a) of this section by submitting the required information to the Saint Lawrence Seaway Development Corporation and the Saint Lawrence Seaway Management Corporation of Canada by fax at 315-764-3235 or at 315-764-3200.

(1529) (c) Seventh Coast Guard District. Those foreign vessels 300 or less gross tons operating in the Seventh Coast Guard District must submit an NOA to the cognizant Captain of the Port (COTP).

(1530) (d) [Suspended]

(1531) (e) Submission to the National Vessel Movement Center (NVMC). Except as provided in paragraphs (b) and (c) of this section, vessels must submit NOA information required by §160.206 (entries 1-9 to Table 160.206) to the NVMC, United States Coast Guard, 408 Coast Guard Drive, Kearneysville, WV 25430, By:

(1532) (1) Electronic submission via the electronic NOA (e-NOA) available on the NVMC web site at http://www.nvmc.uscg.gov.

(1533) (2) Electronic submission via web service of formatted XML (eXtensible Markup Language) documents. E-mail sans@nvmc.uscg.gov to ask for the XML schema details;

(1534) (3) E-mail at sans@nvmc.uscg.gov. Workbook available at http://www.nvmc.uscg.gov;

(1535) (4) Fax at 1-800-547-8724 or 304-264-2684. Workbook available at http://www.nvmc.uscg.gov; or,

(1536) (5) Telephone at 1-800-708-9823 or 304-264-2502.

**§160.212 When to submit an NOA.**

(1537) (a) Submission of NOA. (1) Except as set out in paragraph (a)(2) of this section, all vessels must submit NOAs within the times required in paragraph (a)(3) of this section.

(1538) (2) Towing vessels, when in control of a vessel carrying CDC and operating solely between ports or places in the continental United States, must submit an NOA before departure but at least 12 hours before entering the port or place of destination.

(1539) (3) Times for submitting NOAs areas follows:

| If your voyage time is – | You must submit an NOA – |
|---|---|
| (i) 96 hours or more; or | At least 96 hours before entering the port or place of destination; or |
| (ii) Less than 96 hours | Before departure but at least 24 hours before entering the port or place of destination. |

(1540) (b) Submission of changes to NOA. (1) Except as set out in paragraph (b)(2) of this section, vessels must submit changes in NOA information within the times required in paragraph (b)(3) of this section.

(1541) (2) Towing vessels, when in control of a vessel carrying CDC and operating solely between ports or places in the continental United States, must submit changes to an NOA as soon as practicable but at least 6 hours before entering the port or place of destination.

(1542) (3) Times for submitting changes to NOAs are as follows:

| If your remaining voyage time is – | Then you must submit changes to an NOA – |
|---|---|
| (i) 96 hours or more; | As soon as practicable but at least 24 hours before entering the port or place of destination; |
| (ii) Less than 96 hours but not less than 24 hours; or | As soon as practicable but at least 24 hours before entering the port or place of destination; or |
| (iii) Less than 24 hours | As soon as practicable but at least 12 hours before entering the port or place of destination. |

(1543) (c) [Suspended]

### §160.214 Waivers.

(1544) The Captain of the Port may waive, within that Captain of the Port's designated zone, any of the requirements of this subpart for any vessel or class of vessels upon finding that the vessel, route area of operations, conditions of the voyage, or other circumstances are such that application of this subpart is unnecessary or impractical for purposes of safety, environmental protection, or national security.

### §160.215 Notice of hazardous conditions.

(1545) Whenever there is a hazardous condition either aboard a vessel or caused by a vessel or its operation, the owner, agent, master, operator, or person in charge shall immediately notify the nearest Coast Guard Sector Office or Group Office. (Compliance with this section does not relieve responsibility for the written report required by 46 CFR 4.05–10.)

## Part 162–Inland Waterways Navigation Regulations

### §162.1 General.

(1546) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

### §162.65 All waterways tributary to the Atlantic Ocean south of Chesapeake Bay and all waterways tributary to the Gulf of Mexico east and south of St. Marks, FL.

(1547) (a) Description. This section applies to the following: (1) Waterways. All navigable waters of the United States, natural or artificial, including bays, lakes, sounds, rivers, creeks, intracoastal waterways, as well as canals and channels of all types, which are tributary to or connected by the other waterways with the Atlantic Ocean south of Chesapeake Bay or with the Gulf of Mexico east and south of St. Marks, Florida.

(1548) (2) United States property. All river and harbor lands owned by the United States in or along the waterways described in paragraph (a)(1) of this section, including lock sites and all structures thereon, other sites for Government structures and for the accommodation and use of employees of the United States, and rights of way and spoil disposal areas to the extent of Federal interest therein.

(1549) (3) Vessels and rafts. The term "vessel" as used in this section includes all floating things moved over these waterways other than rafts.

(1550) (b) Waterways-(1) Fairway. A clear channel shall at all times be left open to permit free and unobstructed navigation by all types of vessels and rafts that normally use the various waterways or sections thereof. The District Commander may specify the width of the fairway required in the various waterways under his charge.

(1551) (2) Stoppage in waterway, anchorage or mooring. (i) No vessels or rafts shall anchor or moor in any of the land cuts or other narrow parts of the waterway, except in case of an emergency. Whenever it becomes necessary for a vessel or raft to stop in any such portions of the waterway it shall be securely fastened to one bank and as close to the bank as possible. This shall be done only at such a place and under such conditions as will not obstruct or prevent the passage of other vessels or craft. Stoppages shall be only for such periods as may be necessary.

(1552) (ii) No vessel or raft will be allowed to use any portion of the fairway as a mooring place except temporarily as authorized above without the written permission from the District Commander.

(1553) (iii) When tied up, all vessels must be moored by bow and stern lines. Rafts and tows shall be secured at sufficiently close intervals to insure their not being drawn away from the bank by winds, currents or the suction of passing vessels. Tow lines shall be shortened so that the different parts of the tow shall be as close

together as possible. In narrow sections, no vessel or raft shall be tied abreast of another.

(1554) (iv) Lights shall be displayed in accordance with provisions of the Navigation Rules, International-Inland, Commandant Instruction M16672.2 (series).

(1555) (v) No vessel, even if fastened to the bank as prescribed in paragraph (b)(2)(i) of this section, shall be left without a sufficient crew to care for it properly.

(1556) (vi) Vessels will not be permitted to load or unload in any of the land cuts except as a regular established landing or wharf without written permission secured in advance from the District Commander.

(1557) (vii) No vessel, regardless of size, shall anchor in a dredged channel or narrow portion of a waterway for the purpose of fishing, if navigation is obstructed, thereby.

(1558) (viii) Except in cases of emergency the dropping of anchors, weights, or other ground tackle, within areas occupied by submarine cable or pipe crossings, is prohibited. Such crossings will ordinarily be marked by signboards on each bank of the shore or indicated on coast charts.

(1559) (3) Speed. (i) Vessels shall proceed at a speed which will not endanger other vessels or structures and will not interfere with any work in progress incident to maintaining, improving, surveying or marking the channel.

(1560) (ii) Official signs indicating limited speeds through critical portions of the waterways shall be strictly obeyed.

(1561) (iii) Vessels approaching and passing through a bridge shall so govern their speed as to insure passage through the bridge without damage to the bridge or its fenders.

(1562) (4) Assembly and handling of tows.

(1563) (i) All vessels drawing tows and equipped with rudders shall use two tow lines or a bridle and shorten them to the greatest possible extent so as to have full control at all times. The various parts of a tow shall be securely assembled with the individual units connected by lines as short as practicable. If necessary, as in the case of lengthy or cumbersome tows or tows in restricted channels, the District Commander may require that tows be broken up and may require the installation of a rudder, drag or other approved steering device on the tow in order to avoid obstructing navigation or damaging the property of others, including aids to navigation maintained by the United States or under its authorization, by collision or otherwise.

(1564) (ii) No tow shall be drawn by a vessel that has insufficient power or crew to permit ready maneuverability and safe handling.

(1565) (iii) Tows desiring to pass a bridge shall approach the opening along the axis of the channel so as to pass through without danger of striking the bridge or its fenders. No vessel or tow shall navigate through a drawbridge until the movable span is fully opened.

(1566) (iv) In the event that it is evident to the master of a towing vessel that a tow cannot be safely handled through a bridge, it will be brought to anchor and the towed vessels will be taken through the bridge in small units, or singly if necessary, or the tow will wait until navigation conditions have improved to such an extent that the tow can pass through the bridge without damage.

(1567) (5) Projections from vessels. No vessel carrying a deck load which overhangs or projects over the side of said vessel, or whose rigging projects over the side of the vessel so as to endanger passing vessels, wharves or other property, will enter or pass through any of the narrow parts of the waterway.

(1568) (6) Meeting and passing. Vessels, on meeting or overtaking, shall give the proper signals and pass in accordance with the Navigation Rules, International-Inland, Commandant Instruction M16672.2 (series). Rafts shall give to vessels the side demanded by proper signal. All vessels approaching dredges, or other plant engaged on improvements to a waterway, shall give the signal for passing and slow down sufficiently to stop if so ordered or if no answering signal is received. On receiving the answering signal, they shall then proceed to a pass at a speed sufficiently slow to insure safe navigation.

**NOTE**

(1569) The Corps of Engineers also has regulations dealing with this section in 33 CFR 207.

## Part 164–Navigation Safety Regulations (in part). For a complete description of this part see 33 CFR 164.

### §164.01 Applicability.

(1570) (a) This part (except as specifically limited by this section) applies to each self-propelled vessel of 1600 or more gross tons (except as provided in paragraphs (c) and (d) of this section, or for foreign vessels described in §164.02) when it is operating in the navigable waters of the United States except the St. Lawrence Seaway.

(1571) (b) Sections 164.70 through 164.82 of this part apply to each towing vessel of 12 meters (39.4 feet) or more in length operating in the navigable waters of the United States other than the St. Lawrence Seaway; except that a towing vessel is exempt from the requirements of §164.72 if it is –

(1572) (1) Used solely within a limited geographic area, such as a fleeting-area for barges or a commercial facility, and used solely for restricted service, such as making up or breaking up larger tows;

(1573) (2) Used solely for assistance towing as defined by 46 CFR 10.103;

(1574) (3) Used solely for pollution response; or

(1575) (4) Any other vessel exempted by the Captain of the Port (COTP). The COTP, upon written request, may, in writing, exempt a vessel from §164.72 for a specified route if he or she decides that exempting it would not

allow its unsafe navigation under anticipated conditions.

(1576) (c) Provisions of §§164.11(a)(2) and (c), 164.30, 164.33, and 164.46 do not apply to warships or other vessels owned, leased, or operated by the United States Government and used only in government noncommercial service when these vessels are equipped with electronic navigation systems that have met the applicable agency regulations regarding navigation safety.

(1577) (d) Provisions of §164.46 apply to some self-propelled vessels of less than 1600 gross tonnage.

**§164.02 Applicability exception for foreign vessels.**

(1578) (a) Except as provided in §164.46(a)(2) of this part, including §§164.38 and 164.39, this part does not apply to vessels that:

(1579) (1) Are not destined for, or departing from, a port or place subject to the jurisdiction of the United States; and

(1580) (2) Are in:

(1581) (i) Innocent passage through the territorial sea of the United States; or

(1582) (ii) Transit through navigable waters of the United States which form a part of an international strait.

**§164.03 Incorporation by reference.**

(1583) (a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in paragraph (b) of this section, the Coast Guard must publish notice of change in the Federal Register and the material must be available to the public. All approved material is available for inspection at the Navigational Systems Division (CG-553), Coast Guard Headquarters, 2100 2nd St. SW., Stop 7580, Washington, DC 20593-7580 and at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. All approved material is available from the sources indicated in paragraph (b) of this section.

(1584) (b) The materials approved for incorporation by reference in this part and the sections affected are as follows:

(1585) American Petroleum Institute (API), 1220 L Street NW., Washington, DC 20005

(1586) API Specifications 9A, Specification for Wire Rope, Section 3, Properties and Tests for Wire and Wire Rope, May 28, 1984 — **164.74**

(1587) American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

(1588) ASTM D4268-93, Standard Test Method for Testing Fiber Ropes — **164.74**

(1589) Cordage Institute, 350 Lincoln Street, Hingham, MA 02043

(1590) CIA-3, Standard Test Methods for Fiber Rope Including Standard Terminations, Revised, June 1980 — **164.74**

(1591) International Electrotechnical Commission (IEC), 3, rue de Varemb, Geneva, Switzerland.

(1592) IEC 61993–2, Maritime navigation and radiocommunication equipment and systems–Automatic identification systems (AIS)–part 2: Class A shipborne equipment of the universal automatic identification system (AIS)–Operational and performance requirements, methods of test and required test results First edition, 2001–12 — **164.46**

(1593) International Maritime Organization (IMO), 4 Albert Embankment, London SE1 7SR, U.K. IMO Resolution A342(IX), Recommendation on Performance Standards for Automatic Pilots, adopted November 12, 1975 — **164.13**

(1594) Resolution MSC.74(69), Annex 3, Recommendation on Performance Standards for a Universal Shipborne Automatic Identification System (AIS), adopted May 12, 1998 — **164.46**

(1595) SN/Circ.227, Guidelines for the Installation of a Shipborne Automatic Identification System (AIS), dated January 6, 2003 — **164.46**

(1596) SOLAS, International Convention for Safety of Life at Sea, 1974, and 1988 Protocol relating thereto, 2000 Amendments, effective January and July 2002, (SOLAS 2000 Amendments) — **164.46**

(1597) Conference resolution 1, Adoption of amendments to the Annex to the International Convention for the Safety of Life at Sea, 1974, and amendments to Chapter V of SOLAS 1974, adopted December 12, 2002 — **164.46**

(1598) International Telecommunication Union Radiocommunication Bureau (ITU-R), Place de Nations CH-1211 Geneva 20 Switzerland

(1599) (1) ITU-R Recommendation M.821, Optional Expansion of the Digital Selective-Calling System for Use in the Maritime Mobile Service, 1992 — **164.43**

(1600) (2) ITU-R Recommendation M.825, Characteristics of a Transponder System Using Digital Selective-Calling Techniques for Use with Vessel Traffic Services and Ship-to-Ship Identification,1992 — **164.43**

(1601) ITU–R Recommendation M.1371–1, Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band, 1998-2001 — **164.46**

(1602) Radio Technical Commission for Maritime Services, 655 Fifteenth Street, NW., Suite 300, Washington, DC 20005

(1603) (1) RTCM Paper 12-78/DO-100, Minimum Performance Standards, Loran C Receiving Equipment, 1977 — **164.41**

(1604) (2) RTCM Paper 194-93/SC104-STD, RTCM Recommended Standards for Differential NAVSTAR GPS Service, Version 2.1, 1994 — **164.43**

(1605) (3) RTCM Paper 71-95/SC112-STD, RTCM Recommended Standards for Marine Radar Equipment Installed on Ships of Less Than 300 Tons Gross Tonnage, Version 1.1, October 10, 1995 — **164.72**

(1606) (4) RTCM Paper 191-93/SC112-X, RTCM Recommended Standards for Maritime Radar Equipment Installed on Ships of 300 Tons Gross Tonnage and Upwards, Version 1.2, December 20, 1993 — **164.72**

**§164.11 Navigation under way: General.**

(1607) The owner, master, or person in charge of each vessel underway shall ensure that:

(1608) (a) The wheelhouse is constantly manned by persons who–

(1609) (1) Direct and control the movement of the vessel; and

(1610) (2) Fix the vessel's position;

(1611) (b) Each person performing a duty described in paragraph (a) of this section is competent to perform that duty;

(1612) (c) The position of the vessel at each fix is plotted on a chart of the area and the person directing the movement of the vessel is informed of the vessel's position;

(1613) (d) Electronic and other navigational equipment, external fixed aids to navigation, geographic reference points, and hydrographic contours are used when fixing the vessel's position;

(1614) (e) Buoys alone are not used to fix the vessel's position;

(1615) **Note:** Buoys are aids to navigation placed in approximate positions to alert the mariner to hazards to navigation or to indicate the orientation of a channel. Buoys may not maintain an exact position because strong or varying currents, heavy seas, ice, and collisions with vessels can move or sink them or set them adrift. Although buoys may corroborate a position fixed by other means, buoys cannot be used to fix a position: however, if no other aids are available, buoys alone may be used to establish an estimated position.

(1616) (f) The danger of each closing visual or each closing radar contact is evaluated and the person directing the movement of the vessel knows the evaluation;

(1617) (g) Rudder orders are executed as given;

(1618) (h) Engine speed and direction orders are executed as given;

(1619) (i) Magnetic variation and deviation and gyrocompass errors are known and correctly applied by the person directing the movement of the vessel;

(1620) (j) A person whom he has determined is competent to steer the vessel is in the wheelhouse at all times (See also 46 U.S.C. 8702(d), which requires an able seaman at the wheel on U.S. vessels of 100 gross tons or more in narrow or crowded waters during low visibility.);

(1621) (k) If a pilot other than a member of the vessel's crew is employed, the pilot is informed of the draft, maneuvering characteristics, and peculiarities of the vessel and of any abnormal circumstances on the vessel that may affect its safe navigation.

(1622) (1) Current velocity and direction for the area to be transited are known by the person directing the movement of the vessel;

(1623) (m) Predicted set and drift are known by the person directing movement of the vessel;

(1624) (n) Tidal state for the area to be transited is known by the person directing movement of the vessel;

(1625) (o) The vessel's anchors are ready for letting go;

(1626) (p) The person directing the movement of the vessel sets the vessel's speed with consideration for -

(1627) (1) The prevailing visibility and weather conditions;

(1628) (2) The proximity of the vessel to fixed shore and marine structures;

(1629) (3) The tendency of the vessel underway to squat and suffer impairment of maneuverability when there is small underkeel clearance;

(1630) (4) The comparative proportions of the vessel and the channel;

(1631) (5) The density of marine traffic;

(1632) (6) The damage that might be caused by the vessel's wake;

(1633) (7) The strength and direction of the current; and

(1634) (8) Any local vessel speed limit;

(1635) (q) The tests required by §164.25 are made and recorded in the vessel's log; and

(1636) (r) The equipment required by this part is maintained in operable condition.

(1637) (s) Upon entering U.S. waters, the steering wheel or lever on the navigating bridge is operated to determine if the steering equipment is operating properly under manual control, unless the vessel has been steered under manual control from the navigating bridge within the preceding 2 hours, except when operating on the Great Lakes and their connecting and tributary waters.

(1638) (t) At least two of the steering-gear power units on the vessel are in operation when such units are capable of simultaneous operation, except when the vessel is sailing on the Great Lakes and their connecting and tributary waters, and except as required by paragraph (u) of this section.

(1639) (u) On each passenger vessel meeting the requirements of the International Convention for the Safety of Life at Sea, 1960 (SOLAS 60) and on each cargo vessel meeting the requirements of SOLAS 74 as amended in 1981, the number of steering-gear power units necessary to move the rudder from 35° on either side to 30° on the other in not more than 28 seconds must be in simultaneous operation.

**§164.13 Navigation underway: tankers.**

(1640) (a) As used in this section, "tanker" means a self-propelled tank vessel, including integrated tug barge combinations, constructed or adapted primarily to carry oil or hazardous material in bulk in the cargo spaces and inspected and certificated as a tanker.

(1641) (b) Each tanker must have an engineering watch capable of monitoring the propulsion system,

communicating with the bridge, and implementing manual control measures immediately when necessary. The watch must be physically present in the machinery spaces or in the main control space and must consist of at least a licensed engineer.

(1642) (c) Each tanker must navigate with at least two deck officers with an appropriately endorsed license or merchant mariner credential on watch on the bridge, one of whom may be a pilot. In waters where a pilot is required, the second officer, must be an individual holding an appropriately endorsed license or merchant mariner credential and assigned to the vessel as master, mate, or officer in charge of a navigational watch, who is separate and distinct from the pilot.

(1643) (d) Except as specified in paragraph (e) of this section, a tanker may operate with an auto pilot engaged only if all of the following conditions exist:

(1644) (1) The operation and performance of the automatic pilot conforms with the standards recommended by the International Maritime Organization in IMO Resolution A.342(IX).

(1645) (2) A qualified helmsman is present at the helm and prepared at all times to assume manual control.

(1646) (3) The tanker is not operating in any of the following areas:

(1647) (i) The areas of the traffic separation schemes specified in subchapter P of this chapter.

(1648) (ii) The portions of a shipping safety fairway specified in part 166 of this chapter.

(1649) (iii) An anchorage ground specified in part 110 of this chapter.

(1650) (iv) An area within one-half nautical mile of any U.S. shore.

**§164.15 Navigation bridge visibility.**

(1651) (a) The arrangement of cargo, cargo gear, and trim of all vessels entering or departing from U.S. ports must be such that the field of vision from the navigation bridge conforms as closely as possible to the following requirements:

(1652) (1) From the conning position, the view of the sea surface must not be obscured by more than the lesser of two ship lengths or 500 meters (1,640 feet) from dead ahead to 10 degrees on either side of the vessel. Within this arc of visibility any blind sector caused by cargo, cargo gear, or other permanent obstruction must not exceed 5 degrees.

(1653) (2) From the conning position, the horizontal field of vision must extend over an arc from at least 22.5 degrees abaft the beam on one side of the vessel, through dead ahead, to at least 22.5 degrees abaft the beam on the other side of the vessel. Blind sectors forward of the beam caused by cargo, cargo gear, or other permanent obstruction must not exceed 10 degrees each, nor total more than 20 degrees, including any blind sector within the arc of visibility described in paragraph (a)(1) of this section.

(1654) (3) From each bridge wing, the field of vision must extend over an arc from at least 45 degrees on the opposite bow, through dead ahead, to at least dead astern.

(1655) (4) From the main steering position, the field of vision must extend over an arc from dead ahead to at least 60 degrees on either side of the vessel.

(1656) (b) A clear view must be provided through at least two front windows at all times regardless of weather conditions.

**§164.19 Requirements for vessels at anchor.**

(1657) The master or person in charge of each vessel that is anchored shall ensure that–

(1658) (a) A proper anchor watch is maintained;

(1659) (b) Procedures are followed to detect a dragging anchor; and

(1660) (c) Whenever weather, tide, or current conditions are likely to cause the vessel's anchor to drag, action is taken to ensure the safety of the vessel, structures, and other vessels, such as being ready to veer chain, let go a second anchor, or get underway using the vessel's own propulsion or tug assistance.

**§164.25 Tests before entering or getting underway.**

(1661) (a) Except as provided in paragraphs (b) and (c) of this section no person may cause a vessel to enter into or get underway on the navigable waters of the United States unless no more than 12 hours before entering or getting underway, the following equipment has been tested:

(1662) (1) Primary and secondary steering gear. The test procedure includes a visual inspection of the steering gear and its connecting linkage, and, where applicable, the operation of the following:

(1663) (i) Each remote steering gear control system.

(1664) (ii) Each steering position located on the navigating bridge.

(1665) (iii) The main steering gear from the alternative power supply, if installed.

(1666) (iv) Each rudder angle indicator in relation to the actual position of the rudder.

(1667) (v) Each remote steering gear control system power failure alarm.

(1668) (vi) Each remote steering gear power unit failure alarm.

(1669) (vii) The full movement of the rudder to the required capabilities of the steering gear.

(1670) (2) All internal vessel control communications and vessel control alarms.

(1671) (3) Standby or emergency generator, for as long as necessary to show proper functioning, including steady state temperature and pressure readings.

(1672) (4) Storage batteries for emergency lighting and power systems in vessel control and propulsion machinery spaces.

(1673) (5) Main propulsion machinery, ahead and astern.

(1674) (b) Vessels navigating on the Great Lakes and their connecting and tributary waters, having once completed

the test requirements of this sub-part, are considered to remain in compliance until arriving at the next port of call on the Great Lakes.

(1675) (c) Vessels entering the Great Lakes from the St. Lawrence Seaway are considered to be in compliance with this sub-part if the required tests are conducted preparatory to or during the passage of the St. Lawrence Seaway or within one hour of passing Wolfe Island.

(1676) (d) No vessel may enter, or be operated on the navigable waters of the United States unless the emergency steering drill described below has been conducted within 48 hours prior to entry and logged in the vessel logbook, unless the drill is conducted and logged on a regular basis at least once every three months. This drill must include at a minimum the following:

(1677) (1) Operation of the main steering gear from within the steering gear compartment.

(1678) (2) Operation of the means of communications between the navigating bridge and the steering compartment.

(1679) (3) Operation of the alternative power supply for the steering gear if the vessel is so equipped.

**§164.30 Charts, publications, and equipment: General.**

(1680) No person may operate or cause the operation of a vessel unless the vessel has the marine charts, publications, and equipment as required by §§164.33 through 164.41 of this part.

**§164.33 Charts and publications.**

(1681) (a) Each vessel must have the following:

(1682) (1) Marine charts of the area to be transited, published by the National Ocean Service, U.S. Army Corps of Engineers, or a river authority that–

(1683) (i) Are of a large enough scale and have enough detail to make safe navigation of the area possible; and

(1684) (ii) Are currently corrected.

(1685) (2) For the area to be transited, a currently corrected copy of, or applicable currently corrected extract from, each of the following publications:

(1686) (i) U.S. Coast Pilot.

(1687) (ii) Coast Guard Light List.

(1688) (3) For the area to be transited, the current edition of, or applicable current extract from:

(1689) (i) Tide tables published by private entities using data provided by the National Ocean Service.

(1690) (ii) Tidal current tables published by private entities using data provided by the National Ocean Service, or river current publication issued by the U.S. Army Corps of Engineers, or a river authority.

(1691) (b) As an alternative to the requirements for paragraph (a) of this section, a marine chart or publication, or applicable extract, published by a foreign government may be substituted for a U.S. chart and publication required by this section. The chart must be of large enough scale and have enough detail to make safe navigation of the area possible, and must be currently corrected. The publication, or applicable extract, must singly or in combination contain similar information to the U.S. Government publication to make safe navigation of the area possible. The publication, or applicable extract must be currently corrected, with the exceptions of tide and tidal current tables, which must be the current editions.

(1692) (c) As used in this section, "currently corrected" means corrected with changes contained in all Notices to Mariners published by National Geospatial-Intelligence Agency, or an equivalent foreign government publication, reasonably available to the vessel, and that is applicable to the vessel's transit.

**§164.35 Equipment: All vessels.**

(1693) Each vessel must have the following:

(1694) (a) A marine radar system for surface navigation.

(1695) (b) An illuminated magnetic steering compass, mounted in a binnacle, that can be read at the vessel's main steering stand.

(1696) (c) A current magnetic compass deviation table or graph or compass comparison record for the steering compass, in the wheelhouse.

(1697) (d) A gyrocompass.

(1698) (e) An illuminated repeater for the gyrocompass required by paragraph (d) of this section that is at the main steering stand, unless that gyrocompass is illuminated and is at the main steering stand.

(1699) (f) An illuminated rudder angle indicator in the wheelhouse.

(1700) (g) The following maneuvering information prominently displayed on a fact sheet in the wheelhouse:

(1701) (1) A turning circle diagram to port and starboard that shows the time and distance and advance and transfer required to alter course 90 degrees with maximum rudder angle and constant power settings, for either full and half speeds, or for full and slow speeds. For vessels whose turning circles are essentially the same for both directions, a diagram showing a turning circle in one direction, with a note on the diagram stating that turns to port and starboard are essentially the same, may be substituted.

(1702) (2) The time and distance to stop the vessel from either full and half speeds, or from full and slow speeds, while maintaining approximately the initial heading with minimum application of rudder.

(1703) (3) For each vessel with a fixed propeller, a table of shaft revolutions per minute for a representative range of speeds.

(1704) (4) For each vessel with a controllable pitch propeller, a table of control settings for a representative range of speeds.

(1705) (5) For each vessel that is fitted with an auxiliary device to assist in maneuvering, such as a bow thruster, a table of vessel speeds at which the auxiliary device is effective in maneuvering the vessel.

(1706) (6) The maneuvering information for the normal load and normal ballast condition for–

(1707) (i) Calm weather-wind 10 knots or less, calm sea;

(1708) (ii) No current;

(1709) (iii) Deep water conditions-water depth twice the vessel's draft or greater; and

(1710) (iv) Clean hull.

(1711) (7) At the bottom of the fact sheet, the following statement:

(1712) **Warning**.

(1713) The response of the (name of the vessel) may be different from that listed above if any of the following conditions, upon which the maneuvering information is based, are varied:

(1714) (1) Calm weather-wind 10 knots or less, calm sea;

(1715) (2) No current;

(1716) (3) Water depth twice the vessel's draft or greater;

(1717) (4) Clean hull; and

(1718) (5) Intermediate drafts or unusual trim.

(1719) (h) An echo depth sounding device.

(1720) (i) A device that can continuously record the depth readings of the vessel's echo depth sounding device, except when operating on the Great Lakes and their connecting and tributary waters.

(1721) (j) Equipment on the bridge for plotting relative motion.

(1722) (k) Simple operating instructions with a block diagram, showing the changeover procedures for remote steering gear control systems and steering gear power units, permanently displayed on the navigating bridge and in the steering gear compartment.

(1723) (l) An indicator readable from the centerline conning position showing the rate of revolution of each propeller, except when operating on the Great Lakes and their connecting and tributary waters.

(1724) (m) If fitted with controllable pitch propellers, an indicator readable from the centerline conning position showing the pitch and operational mode of such propellers, except when operating on the Great Lakes and their connecting and tributary waters.

(1725) (n) If fitted with lateral thrust propellers, an indicator readable from the centerline conning position showing the direction and amount of thrust of such propellers, except when operating on the Great Lakes and their connecting and tributary waters.

(1726) (o) A telephone or other means of communication for relaying headings to the emergency steering station. Also, each vessel of 500 gross tons and over and constructed on or after June 9, 1995 must be provided with arrangements for supplying visual compass-readings to the emergency steering station.

### §164.37 Equipment: Vessels of 10,000 gross tons or more.

(1727) (a) Each vessel of 10,000 gross tons or more must have, in addition to the radar system under §164.35(a), a second marine radar system that operates independently of the first.

**Note**

(1728) Independent operation means two completely separate systems, from separate branch power supply circuits or distribution panels to antennas, so that failure of any component of one system will not render the other system inoperative.

(1729) (b) On each tanker of 10,000 gross tons or more that is subject to Section 5 of the Port and Tanker Safety Act of 1978 (46 U.S.C. 391a), the dual radar system required by this part must have a short range capability and a long range capability; and each radar must have true north features consisting of a display that is stabilized in azimuth.

### §164.38 Automatic radar plotting aids (ARPA). (See 33 CFR 164.)

### §164.39 Steering gear: Foreign tankers.

(1730) (a) This section applies to each foreign tanker of 10,000 gross tons or more, except a public vessel, that–

(1731) (1) Transfers oil at a port or place subject to the jurisdiction of the United States; or

(1732) (2) Otherwise enters or operates in the navigable waters of the United States, except a vessel described by §164.02 of this part.

(1733) (b) Definitions. The terms used in this section are as follows:

(1734) Constructed means the same as in Chapter II-1, Regulations 1.1.2 and 1.1.3.1, of SOLAS 74.

(1735) Existing tanker means a tanker–

(1736) (1) For which the building contract is placed on or after June 1, 1979;

(1737) (2) In the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after January 1, 1980;

(1738) (3) The delivery of which occurs on or after June 1, 1982; or

(1739) (4) That has undergone a major conversion contracted for on or after June 1, 1979; or construction of which was begun on or after January 1, 1980, or completed on or after June 1, 1982.

(1740) Public vessel, oil, hazardous materials, and foreign vessel mean the same as in 46 U.S.C. 2101.

(1741) SOLAS 74 means the International Convention for the Safety of Life at Sea, 1974, as amended.

(1742) Tanker means a self-propelled vessel defined as a tanker by 46 U.S.C. 2101(38) or as a tank vessel by 46 U.S.C. 2101(39).

(1743) (c) Each tanker constructed on or after September 1, 1984, must meet the applicable requirements of Chapter II-1, Regulations 29 and 30, of SOLAS 74.

(1744) (d) Each tanker constructed before September 1, 1984, must meet the requirements of Chapter II-1, Regulation 29.19, of SOLAS 74.

(1745) (e) Each tanker of 40,000 gross tons or more, constructed before September 1, 1984, that does not meet the single-failure criterion of Chapter II-1, Regulation

29.16, of SOLAS 74, must meet the requirements of Chapter II-1, Regulation 29.20, of SOLAS 74.

(1746) (f) Each tanker constructed before September 1, 1984, must meet the applicable requirements of Chapter II-1, Regulations 29.14 and 29.15, of SOLAS 74.

**§164.40 Devices to indicate speed and distance.**

(1747) (a) Each vessel required to be fitted with an Automatic Radar Plotting Aid (ARPA) under §164.38 must be fitted with a device to indicate speed and distance of the vessel either through the water, or over the ground. Vessels constructed prior to September 1, 1984, must have this equipment according to the following schedule:

(1748) (1) Each tank vessel constructed before September 1, 1984, operating on the navigable waters of the United States–

(1749) (i) If of 40,000 gross tons or more, by January 1, 1985;

(1750) (ii) If of 10,000 gross tons or more but less than 40,000 gross tons, by January 1, 1986.

(1751) (2) Each self-propelled vessel constructed before September 1, 1984, that is not a tank vessel, operating on the navigable waters of the United States–

(1752) (i) If of 40,000 gross tons or more, by September 1, 1986;

(1753) (ii) If of 20,000 gross tons or more, but less than 40,000 gross tons, by September 1, 1987;

(1754) (iii) If of 15,000 gross tons or more, but less than 20,000 gross tons, by September 1, 1988.

(1755) (b) The device must meet the following specifications:

(1756) (1) The display must be easily readable on the bridge by day or night.

(1757) (2) Errors in the indicated speed, when the vessel is operating free from shallow water effect, and from the effects of wind, current, and tide, should not exceed 5 percent of the speed of the vessel, or 0.5 knot, whichever is greater.

(1758) (3) Errors in the indicated distance run, when the vessel is operating free from shallow water effect, and from the effects of wind, current, and tide, should not exceed 5 percent of the distance run of the vessel in one hour or 0.5 nautical mile in each hour, whichever is greater.

**§164.41 Electronic position fixing devices.**

(1759) (a) Each vessel calling at a port in the continental United States, including Alaska south of Cape Prince of Wales, except each vessel owned or bareboat chartered and operated by the United States, or by a state or its political subdivision, or by a foreign nation, and not engaged in commerce, must have a satellite navigation receiver with–

(1760) (1) Automatic acquisition of satellite signals after initial operator settings have been entered; and

(1761) (2) Position updates derived from satellite information during each usable satellite pass.

(1762) (b) A system that is found by the Commandant to meet the intent of the statements of availability, coverage, and accuracy for the U.S. Coastal Confluence Zone (CCZ) contained in the U.S. "Federal Radionavigation Plan" (Report No. DOD-NO 4650.4-P, I or No. DOT-TSC-RSPA-80-16, I). A person desiring a finding by the Commandant under this subparagraph must submit a written application describing the device to the Coast Guard Deputy Commander for Operations (CG-DCO), 2100 2nd St. SW., Stop 7471, Washington, DC 20593-7471. After reviewing the application, the Commandant may request additional information to establish whether or not the device meets the intent of the Federal Radionavigation Plan.

(1763) **Note:** The Federal Radionavigation Plan is available from the National Technical Information Service, Springfield, Va. 22161, with the following Government Accession Numbers:

(1764) Vol 1, ADA 116468

(1765) Vol 2, ADA 116469

(1766) Vol 3, ADA 116470

(1767) Vol 4, ADA 116471

**§164.42 Rate of turn indicator.**

(1768) Each vessel of 100,000 gross tons or more constructed on or after September 1, 1984, shall be fitted with a rate of turn indicator.

**§164.43 Automatic Identification System Shipborne Equipment–Prince William Sound.**

(1769) (a) Until December 31, 2004, each vessel required to provide automated position reports to a Vessel Traffic Service (VTS) under §165.1704 of this subchapter must do so by an installed Automatic Identification System Shipborne Equipment (AISSE) system consisting of a:

(1770) (1) Twelve-channel all-in-view Differential Global Positioning System (dGPS) receiver;

(1771) (2) Marine band Non-Directional Beacon receiver capable of receiving dGPS error correction messages;

(1772) (3) VHF-FM transceiver capable of Digital Selective Calling (DSC) on the designated DSC frequency; and

(1773) (4) Control unit.

(1774) (b) An AISSE must have the following capabilities:

(1775) (1) Use dGPS to sense the position of the vessel and determine the time of the position using Universal Coordinated Time (UTC);

(1776) (2) Fully use the broadcast type 1, 2, 3, 5, 6, 7, 9, and 16 messages, as specified in RTCM Recommended Standards for Differential NAVSTAR GPS Service in determining the required information;

(1777) (3) Achieve a position error which is less than ten meters (32.8 feet) 2 distance root mean square (2 drms) from the true North American Datum of 1983 (NAD 83) in the position information transmitted to a VTS;

(1778) (4) Achieve a course error of less than 0.5 degrees from true course over ground in the course information transmitted to a VTS;

(1779) (5) Achieve a speed error of less than 0.05 knots from true speed over ground in the speed information transmitted to a VTS;

(1780) (6) Receive and comply with commands broadcast from a VTS as DSC messages on the designated DSC frequency;

(1781) (7) Receive and comply with RTCM messages broadcast as minimum shift keying modulated medium frequency signals in the marine radiobeacon band, and supply the messages to the dGPS receiver;

(1782) (8) Transmit the vessel's position, tagged with the UTC position solution, course over ground, speed over ground, and Lloyd's identification number to a VTS;

(1783) (9) Display a visual alarm to indicate to shipboard personnel when a failure to receive or utilize the RTCM messages occurs;

(1784) (10) Display a separate visual alarm which is triggered by a VTS utilizing a DSC message to indicate to shipboard personnel that the U.S. Coast Guard dGPS system cannot provide the required error correction messages; and

(1785) (11) Display two RTCM type 16 messages, one of which must display the position error in the position error broadcast.

(1786) (c) An AISSE is considered non-operational if it fails to meet the requirements of paragraph (b) of this section.

(1787) **Note:** Vessel Traffic Service (VTS) areas and operating procedures are set forth in Part 161 of this chapter.

### §164.46 Automatic Identification System (AIS).

(1788) (a) The following vessels must have a properly installed, operational, type approved AIS as of the date specified:

(1789) (1) Self-propelled vessels of 65 feet or more in length, other than passenger and fishing vessels, in commercial service and on an international voyage, not later than December 31, 2004.

(1790) (2) Notwithstanding paragraph (a)(1) of this section, the following, self-propelled vessels, that are on an international voyage must also comply with SOLAS, as amended, Chapter V, regulation 19.2.1.6, 19.2.4, and 19.2.3.5 or 19.2.5.1 as appropriate (Incorporated by reference, see §164.03):

(1791) (i) Passenger vessels, of 150 gross tonnage or more, not later than July 1, 2003;

(1792) (ii) Tankers, regardless of tonnage, not later than the first safety survey for safety equipment on or after July 1, 2003;

(1793) (iii) Vessels, other than passenger vessels or tankers, of 50,000 gross tonnage or more, not later than July 1, 2004; and

(1794) (iv) Vessels, other than passenger vessels or tankers, of 300 gross tonnage or more than 50,000 gross tonnage, not later than the first safety survey for safety equipment on or after July 1, 2004, but no later than December 31, 2004.

(1795) (3) Notwithstanding paragraphs (a)(1) and (a)(2) of this section, the following vessels, when navigating an area denoted in table 161.12(c) of §161.12 of this chapter, not later than December 31, 2004:

(1796) (i) Self-propelled vessels of 65 feet or more in length, other than fishing vessel and passenger vessels certificated to carry less than 151 passengers-for-hire, in commercial service;

(1797) (ii) Towing vessels of 26 feet or more in length and more than 600 horsepower, in commercial service;

(1798) (iii) Passenger vessels certificated to carry more than 150 passengers-for-hire.

(1799) Note to §164.46(a): "Properly installed" refers to an installation using the guidelines set forth in IMO SN/Circ. 227 (incorporated by reference, see §164.03). Not all AIS units are able to broadcast position, course, and speed without the input of an external positioning device (e.g. dGPS); the use of other external devices (e.g. transmitting heading device, gyro, rate of turn indicator) is highly recommended, however, not required except as stated in §164.46(a)(2). "Type approved" refers to an approval by an IMO recognized Administration as to comply with IMO Resolution MSC.74(69), ITU–R Recommendation M.1371–1, and IEC 61993-2 (Incorporated by reference, see §164.03). "Length" refers to "registered length" as defined in 46 CFR part 69. "Gross tonnage" refers to tonnage as defined under the International Convention on Tonnage Measurement of Ships, 1969.

(1800) (b) The requirements for Vessel Bridge-to-Bridge radiotelephones in §§26.04(a) and (c), 26.05, 26.06 and 26.07 of this chapter, also apply to AIS. The term "effective operating condition" used in §26.06 of this chapter includes accurate input and upkeep of AIS data fields.

(1801) (c) The use of a portable AIS is permissible only to the extent that electromagnetic interference does not affect the proper function of existing navigation and communication equipment on board and such that only one AIS unit may be in operation at any one time.

(1802) (d) The AIS Pilot Plug, on each vessel over 1,600 gross tons, on an international voyage, must be available for pilot use, easily accessible from the primary conning position of the vessel, and near a 120 Volt, AC power, 3-prong receptacle.

### §164.51 Deviations from rules: Emergency.

(1803) Except for the requirements of §164.53(b), in an emergency, any person may deviate from any rule in this part to the extent necessary to avoid endangering persons, property, or the environment.

### §164.53 Deviations from rules and reporting: Non-operating equipment.

(1804) (a) If during a voyage any equipment required by this part stops operating properly, the person directing the movement of the vessel may continue to the next port of call, subject to the directions of the District

**TABLE 164.72 – Equipment, Charts or Maps, and Publications of Towing Vessels for 12 Meters or More in Length**

| | Western Rivers | U.S. Navigable Waters (other than Western Rivers) | Waters seaward of Navigable Waters and 3 NM or more from shore on the Great Lakes |
|---|---|---|---|
| Marine Radar: Towing Vessels of less than 300 GT | RTCM Paper 71-95/SC112-STD Version 1.1 Display Category II[1] Stabilization Category BRAVO | RTCM Paper 71-95/SC112-STD Version 1.1 Display Category II[1] Stabilization Category BRAVO | RTCM Paper 71-95/SC112-STD Version 1.1 Display Category I[2] Stabilization Category ALPHA |
| Towing Vessels of 300 GT or more | RTCM Paper 191-93/SC112-X Version 1.2 (except the Azimuth stabilization requirement in paragraph 3.10)[1] | RTCM Paper 191-93/SC112-X Version 1.2 (except the Azimuth stabilization requirement in paragraph 3.10)[1] | RTCM Paper 191-93/SC112-X Version 1.2[1] |
| Searchlight | X | X | X |
| VHF-FM Radio | X | X | X |
| Magnetic Compass | X[3] | X | X |
| Swing Meter | X[3] | | |
| Echo Depth-sounding Device | | X | X |
| Electronic Position Fixing Device | | | X |
| Charts or Maps | (1) Large enough scale (2) Current edition or currently corrected edition | (1) Large enough scale (2) Current edition or currently corrected edition | (1) Large enough scale (2) Currently corrected edition |
| General Publications | (1) U.S. Coast Guard Light List (2) Notices to Navigation or Local Notices to Mariners (3) River-current Tables | (1) U.S. Coast Guard Light List (2) Local Notices to Mariners (3) Tidal-current Tables (4) Tide Tables (5) U.S. Coast Pilot | (1) U.S. Coast Guard Light List (2) Local Notices to Mariners (3) Tidal-current Tables (4) Tide Tables (5) U.S. Coast Pilot |

Notes:
[1] Towing vessels with existing radar must meet this requirement by August 2, 1998.
[2] Towing vessels with existing radar must meet this requirement by August 2, 1998 but do not need to meet the display and stabilization requirements until August 2, 2001.
[3] A towing vessel may carry either a swing-meter or a magnetic compass.

Commander or the Captain of the Port, as provided by 33 CFR 160.

(1805) (b) If the vessel's radar, radio navigation receivers, gyrocompass, echo depth sounding device, or primary steering gear stops operating properly, the person directing the movement of the vessel must report or cause to be reported that it is not operating properly to the nearest Captain of the Port, District Commander, or, if participating in a Vessel Traffic Service, to the Vessel Traffic Center, as soon as possible.

**§164.55 Deviations from rules: Continuing operation or period of time.**

(1806) The Captain of the Port, upon written application, may authorize a deviation from any rule in this part if he determines that the deviation does not impair the safe navigation of the vessel under anticipated conditions and will not result in a violation of the rules for preventing collisions at sea. The authorization may be issued for vessels operating in the waters under the jurisdiction of the Captain of the Port for any continuing operation or period of time the Captain of the Port specifies.

**§164.61 Marine casualty reporting and record retention.**

(1807) When a vessel is involved in a marine casualty as defined in 46 CFR 4.03–1, the master or person in charge of the vessel shall–

(1808) (a) Ensure compliance with 46 CFR 4.05, "Notice of Marine Casualty and Voyage Records," and

(1809) (b) Ensure that the voyage records required by 46 CFR 4.05–15 are retained for -

(1810) (1) 30 days after the casualty if the vessel remains in the navigable waters of the United States; or

(1811) (2) 30 days after the return of the vessel to a United States port if the vessel departs the navigable waters of the United States within 30 days after the marine casualty.

**§164.70 Definitions.**

(1812) For purposes of §§164.72 through 164.82, the term –

(1813) Current edition means the most recent published version of a publication, chart, or map required by §164.72.

(1814) Currently corrected edition means a current or previous edition of a publication required by §164.72, corrected with changes that come from Notice to Mariners (NTMs) or Notices to Navigation reasonably available and that apply to the vessel's transit. Hand-annotated river maps from U.S. Army Corps of Engineers (ACOE) are currently corrected editions if issued within the previous 5 years.

(1815) Great Lakes means the Great Lakes and their connecting and tributary waters including the Calumet River as far as the Thomas J. O'Brien Lock and Controlling Works (between miles 326 and 327), the Chicago River as far as the east side of the Ashland Avenue Bridge (between miles 321 and 322), and the Saint Lawrence River as far east as the lower exit of Saint Lambert Lock.

(1816) Swing-meter means an electronic or electric device that indicates that rate of turn of the vessel on board which it is installed.

(1817) Towing vessel means a commercial vessel engaged in or intending to engage in pulling, pushing or hauling alongside, or any combination of pulling, pushing, or hauling alongside.

(1818) Western Rivers means the Mississippi River, its tributaries, South Pass, and Southwest Pass, to the navigational-demarcation lines dividing the high seas from harbors, rivers, and other inland waters of the United States, and the Port Allen-Morgan City Alternative Route, and that part of the Atchafalaya River above its junction with the Port Allen-Morgan City Alternative Route including the Old River and the Red River and those waters specified by §§89.25 and 89.27 of this chapter, and such other, similar waters as are designated by the COTP.

**§164.72 Navigational-safety equipment, charts or maps, and publications required on towing vessels.**

(1819) (a) Except as provided by §164.01(b), each towing vessel must be equipped with the following navigational-safety equipment:

(1820) (1) Marine Radar. By August 2, 1997, a marine radar that meets the following applicable requirements:

(1821) (i) For a vessel of less than 300 tons gross tonnage that engages in towing on navigable waters of the U.S., including Western Rivers, the radar must meet–

(1822) (A) The requirements of the Federal Communications Commission (FCC) specified by 47 CFR part 80; and

(1823) (B) RTCM Standard for Marine Radar Equipment Installed on Ships of Less Than 300 Tons Gross Tonnage, RTCM Paper-71-95/SC112-STD, Version 1.1, display Category II and stabilization Category Bravo.

(1824) (ii) For a vessel of less than 300 tons gross tonnage that engages in towing seaward of navigable waters of the U.S. or more than three nautical miles from shore on the Great Lakes, the radar must meet–

(1825) (A) The requirements of the FCC specified by 47 CFR part 80; and

(1826) (B) RTCM Standard for Marine Radar Equipment Installed on Ships of Less Than 300 Tons Gross Tonnage, RTCM Paper 71-95/SC112-STD, Version 1.1, display Category I and stabilization Category Alpha.

(1827) (iii) For a vessel of 300 tons gross tonnage or more that engages in towing on navigable waters of the U.S., including Western rivers, the radar must meet–

(1828) (A) The requirements of the Federal Communications Commission (FCC) specified by 47 CFR part 80; and

(1829) (B) RTCM Recommended Standards for Marine Radar Equipment Installed on Ships of 300 Tons Gross Tonnage and Upwards, RTCM Paper 191-93/SC112-X, Version 1.2 except the requirements for azimuth stabilization in paragraph 3.10.

(1830) (iv) For a vessel of 300 tons gross tonnage or more that engages in towing seaward of navigable waters of the U.S. or more than three nautical miles from shore on the Great Lakes, the radar must meet–

(1831) (A) The requirements of the FCC specified by 47 CFR Part 80; and

(1832) (B) RTCM Recommended Standards for Marine Radar Equipment Installed on Ships of 300 Tons Gross Tonnage and Upwards, RTCM Paper 191-93/SC112-X, Version 1.2.

(1833) (v) A towing vessel with an existing radar must meet the applicable requirements of paragraphs (a)(1)(i) through (iv) of this section by August 2, 1998; except that a towing vessel with an existing radar must meet the display and stabilization requirements of paragraph (a)(1)(ii)(B) of this section by August 2, 2001.

(1834) (2) Searchlight. A searchlight, directable from the vessel's main steering station and capable of illuminating objects at a distance of at least two times the length of the tow.

(1835) (3) VHF-FM Radio. An installation or multiple installations of VHF-FM radios as prescribed by part 26 of this chapter and 47 CFR part 80, to maintain a continuous listening watch on the designated calling channel, VHF-FM Channel 13 (except on portions of the Lower Mississippi River, where VHF-FM Channel 67 is the designated calling channel), and to separately monitor the International Distress and Calling Channel, VHF-FM Channel 16, except when transmitting or receiving traffic on other VHF-FM channels or when participating in a Vessel Traffic Service (VTS) or monitoring a channel of a VTS. (Each U.S. towing vessel of 26 feet (about 8 meters) or more in length, except a public vessel, must hold a ship-radio-station license for radio transmitters (including radar and EPIRBs), and each operator must hold a restricted operator's license or higher. To get an application for either license, call 800-418-FORM or 202-418-FORM, or write to the FCC; Wireless Bureau, Licensing Division; 1270 Fairfield Road; Gettysburg, PA 17325-7245.)

(1836) (4) Magnetic Compass. Either–

(1837) (i) An illuminated swing-meter or an illuminated card-type magnetic steering compass readable from the vessel's main steering station, if the vessel engages in towing exclusively on Western Rivers; or

(1838) (ii) An illuminated card-type magnetic steering compass readable from the vessel's main steering station.

(1839) (5) Echo Depth-Sounding Device. By August 2, 2001, an echo depth-sounding device readable from the vessel's main steering station, unless the vessel engages in towing exclusively on Western Rivers.

(1840) (6) Electronic Position-Fixing Device. An electronic position-fixing device, a satellite navigational system such as the Global Positioning System (GPS) as required by §164.41, if the vessel engages in towing seaward of navigable waters of the U.S. or more than three nautical miles from shore on the Great Lakes.

(1841) (b) Each towing vessel must carry on board and maintain the following:

(1842) (1) Charts or maps. Marine charts or maps of the areas to be transited, published by the National Ocean Service (NOS), the ACOE, or a river authority that satisfy the following requirements.

(1843) (i) The charts or maps must be of a large enough scale and have enough detail to make safe navigation of the areas possible.

(1844) (ii) The charts or maps must be either–

(1845) (A) Current editions or currently corrected editions, if the vessel engages in towing exclusively on navigable waters of the U.S., including Western Rivers; or

(1846) (B) Currently corrected editions, if the vessel engages in towing seaward of navigable waters of the U.S. or more than three nautical miles from shore on the Great Lakes.

(1847) (iii) The charts or maps may be, instead of charts or maps required by paragraphs (b)(1) (i) and (ii) of this section, currently corrected marine charts or maps, or applicable extracts, published by a foreign government. These charts or maps, or applicable extracts, must contain information similar to that on the charts or maps required by paragraphs (b)(1) (i) and (ii) of the section, be of large enough scale, and have enough detail to make safe navigation of the areas possible, and must be currently corrected.

(1848) (2) General publications. A currently corrected edition of, or an applicable currently corrected extract from, each of the following publications for the area to be transited:

(1849) (i) If the vessel is engaged in towing exclusively on Western Rivers–

(1850) (A) U.S. Coast Guard Light List;

(1851) (B) Applicable Notices to Navigation published by the ACOE, or Local Notices to Marines (LNMs) published by the Coast Guard, for the area to be transited, when available; and

(1852) (C) River-current tables published by the ACOE or a river authority, if available.

(1853) (ii) if the vessel is engaged other than in towing exclusively on Western Rivers–

(1854) (A) Coast Guard Light List;

(1855) (B) Notices to Mariners published by National Geospatial-Intelligence Agency, or LNMs published by the Coast Guard;

(1856) (C) Tidal-Current tables published by private entities using data provided by the NOS, or river-current tables published by the ACOE or a river authority:

(1857) (D) Tide tables published by private entities using data provided by the NOS; and

(1858) (E) U.S. Coast Pilot.

(1859) (c) Table 164.72, following, summarizes the navigational-safety equipment, charts or maps, and publications required for towing vessels of 12 meters or more in length engaged in towing:

**§164.74 Towline and terminal gear for towing astern.**

(1860) (a) Towline. The owner, master, or operator of each vessel towing astern shall ensure that the strength of each towline is adequate for its intended service, considering at least the following factors:

(1861) (1) The size and material of each towline must be–

(1862) (i) Appropriate for the horsepower or bollard pull of the vessel;

(1863) (ii) Appropriate for the static loads and dynamic loads expected during the intended service;

(1864) (iii) Appropriate for the sea conditions expected during the intended service;

(1865) (iv) Appropriate for exposure to the marine environment and to any chemicals used or carried on board the vessel;

(1866) (v) Appropriate for the temperatures of normal stowage and service on board the vessel;

(1867) (vi) Compatible with associated navigational-safety equipment; and

(1868) (vii) Appropriate for the likelihood of mechanical damage.

(1869) (2) Each towline as rigged must be–

(1870) (i) Free of knots;

(1871) (ii) Spliced with a thimble, or have a poured socket at its end; and

(1872) (iii) Free of wire clips except for temporary repair, for which the towline must have a thimble and either five wire clips or as many wire clips as the manufacturer specifies for the nominal diameter and construction of the towline, whichever is more.

(1873) (3) The condition of each towline must be monitored through the–

(1874) (i) Keeping on board the towing vessel or in company files of a record of the towline's initial minimum breaking strength as determined by the manufacturer, by a classification ("class") society authorized in §157.04 of this chapter, or by a tensile test that meets API Specifications 9A, Specification for Wire Rope, Section 3; ASTM D 4268 (incorporated by reference, see §164.03), Standard Test Method for Testing Fiber Ropes; or Cordage Institute CIA 3, Standard Test Methods for Fiber Rope Including Standard Terminations;

(1875) (ii) If the towline is purchased from another owner, master, or operator of a vessel with the intent to use it as a towline or if it is retested for any reason, keeping on board the towing vessel or in company files of a record of each retest of the towline's minimum breaking strength as determined by a class society authorized in §157.04 of this chapter or by a tensile test that meets API Specification 9A, Section 3; ASTM D 4268 (incorporated by reference, see §164.03); or Cordage Institute CIA 3, Standard Test Methods;

(1876) (iii) Conducting visual inspections of the towline in accordance with the manufacturer's recommendations, or at least monthly, and whenever the serviceability of the towline is in doubt (the inspections being conducted by the owner, master, or operator, or by a person on

whom the owner, master, or operator confers the responsibility to take corrective measures appropriate for the use of the towline);

(1877) (iv) Evaluating the serviceability of the whole towline or any part of the towline, and removing the whole or part from service either as recommended by the manufacturer or a class society authorized in §157.04 of this chapter or in accordance with a replacement schedule developed by the owner, master, or operator that accounts for at least the–

(1878) (A) Nautical miles on, or time in service of, the towline;

(1879) (B) Operating conditions experienced by the towline;

(1880) (C) History of loading of the towline;

(1881) (D) Surface condition, including corrosion and discoloration, of the towline;

(1882) (E) Amount of visible damage to the towline;

(1883) (F) Amount of material deterioration indicated by measurements of diameter and, if applicable, measurements of lay extension of the towline; and

(1884) (G) Point at which a tensile test proves the minimum breaking strength of the towline inadequate by the standards of paragraph (a)(1) of this section, if necessary; and

(1885) (v) Keeping on board the towing vessel or in company files of a record of the material condition of the towline when inspected under paragraphs (a)(3)(iii) and (iv) of this section. Once this record lapses for three months or more, except when a vessel is laid up or out of service or has not deployed its towline, the owner, master, or operator shall retest the towline or remove it from service.

(1886) (b) Terminal gear. The owner, master, or operator of each vessel towing astern shall ensure that the gear used to control, protect, and connect each towline meets the following criteria:

(1887) (1) The material and size of the terminal gear are appropriate for the strength and anticipated loading of the towline and for the environment;

(1888) (2) Each connection is secured by at least one nut with at least one cotter pin or other means of preventing its failure;

(1889) (3) The lead of the towline is appropriate to prevent sharp bends in the towline from fairlead blocks, chocks, or tackle;

(1890) (4) There is provided a method, whether mechanical or non-mechanical, that does not endanger operating personnel but that easily releases the towline;

(1891) (5) The towline is protected from abrasion or chafing by chafing gear, lagging, or other means;

(1892) (6) Except on board a vessel towing in ice on Western Rivers or one using a towline of synthetic or natural fiber, there is fitted a winch that evenly spools and tightly winds the towline; and

(1893) (7) If a winch is fitted, there is attached to the main drum a brake that has holding power appropriate for the horsepower or bollard pull of the vessel and can be operated without power to the winch.

### §164.76 Towline and terminal gear for towing alongside and pushing ahead.

(1894) The owner, master, or operator of each vessel towing alongside or pushing ahead shall ensure the face wires, spring lines, and push gear used–

(1895) (a) Are appropriate for the vessel's horsepower;

(1896) (b) Are appropriate for the arrangement of the tow;

(1897) (c) Are frequently inspected; and

(1898) (d) Remain serviceable.

### §164.78 Navigation under way: Towing vessels.

(1899) (a) The owner, master, or operator of each vessel towing shall ensure that each person directing and controlling the movement of the vessel–

(1900) (1) Understands the arrangement of the tow and the effects of maneuvering on the vessel towing and on the vessel, barge, or object being towed;

(1901) (2) Can fix the position of the vessel using installed navigational equipment, aids to navigation, geographic reference- points, and hydrographic contours;

(1902) (3) Does not fix the position of the vessel using buoys alone (Buoys are aids to navigation placed in approximate positions either to alert mariners to hazards to navigation or to indicate the orientation of a channel. They may not maintain exact charted positions, because strong or varying currents, heavy seas, ice and collisions with vessels can move or sink them or set them adrift. Although they may corroborate a position fixed by other means, they cannot fix a position; however, if no other aids are available, buoys alone may establish an estimated position.);

(1903) (4) Evaluates the danger of each closing visual or radar contact;

(1904) (5) Knows and applies the variation and deviation, where a magnetic compass is fitted and where charts or maps have enough detail to enable this type of correction;

(1905) (6) Knows the speed and direction of the current, and the set, drift, and tidal state for the area to be transited;

(1906) (7) Proceeds at a safe speed taking into account the weather, visibility, density of traffic, draft of tow, possibility of wake damage, speed and direction of the current, and local speed and direction of the current, and local speed-limits; and

(1907) (8) Monitors the voyage plan required by §164.80.

(1908) (b) The owner, master, or operator of each vessel towing shall ensure that the tests and inspections required by §164.80 are conducted and that the results are entered in the log or other record carried on board.

### §164.80 Tests, inspections, and voyage planning.

(1909) (a) The owner, master, or operator of each towing vessel of less than 1,600 GT shall ensure that the following tests and inspections of gear occur before the vessel

embarks on a voyage of more than 24 hours or when each new master or operator assumes command:

(1910) (1) Steering-systems. A test of the steering-gear-control system; a test of the main steering gear from the alternative power supply, if installed; a verification of the rudder-angle indicator relative to the actual position of the rudder; and a visual inspection of the steering gear and its linkage.

(1911) (2) Navigational equipment. A test of all installed navigational equipment.

(1912) (3) Communications. Operation of all internal vessel control communications and vessel-control alarms, if installed.

(1913) (4) Lights. Operation of all navigational lights and all searchlights.

(1914) (5) Terminal gear. Visual inspection of tackle; of connections of bridle and towing pendant, if applicable; of chafing gear; and the winch brake, if installed.

(1915) (6) Propulsion systems. Visual inspection of the spaces for main propulsion machinery, of machinery, and of devices for monitoring machinery.

(1916) (b) The owner, master, or operator of each towing vessel of 1,600 GT or more shall ensure that the following tests of equipment occur at the frequency required by §164.25 and that the following inspections of gear occur before the vessel embarks on a voyage of more than 24 hours or when each new master or operator assumes command:

(1917) (1) Navigational equipment. Tests of onboard equipment as required by §164.25.

(1918) (2) Terminal gear. Visual inspection of tackle; of connections of bridle and towing pendant, if applicable; of charting gear; and of the winch brake, if installed.

(1919) (c)(1) The voyage-planning requirements outlined in this section do not apply to you if your towing vessel is–

(1920) (i) Used solely for any of the following services or any combination of these services–

(1921) (A) Within a limited geographic area, such as fleeting-area for barges or a commercial facility, and used for restricted service, such as making up or breaking up larger tows:

(1922) (B) For harbor assist;

(1923) (C) For assistance towing as defined by 46 CFR 10.103;

(1924) (D) For response to emergency or pollution;

(1925) (ii) A public vessel that is both owned, or demise chartered, and operated by the United States Government or by a government of a foreign country; and that is not engaged in commercial service;

(1926) (iii) A foreign vessel engaged in innocent passage; or

(1927) (iv) Exempted by the Captain of the Port (COTP).

(1928) (2) If you think your towing vessel should be exempt from these voyage planning requirements for a specified route, you should submit a written request to the appropriate COTP. The COTP will provide you with a written response granting or denying your request.

(1929) (3) If any part of a towing vessel's intended voyage is seaward of the baseline (i.e. the shoreward boundary) of the territorial sea of the U.S., then the owner, master, or operator of the vessel, employed to tow a barge or barges, must ensure that the voyage with the barge or barges is planned, taking into account all pertinent information before the vessel embarks on the voyage. The master must check the planned route for proximity to hazards before the voyage begins. During a voyage, if a decision is made to deviate substantially from the planned route, then the master or mate must plan the new route before deviating from the planned route. The voyage plan must follow company policy and consider the following (related requirements noted in parentheses):

(1930) (i) Applicable information from nautical charts and publication (also see paragraph (b) of section 164.72), including Coast Pilot, Coast Guard Light List, and Coast Guard Local Notice to Mariners for the port of departures, all ports of call, and the destination;

(1931) (ii) Current and forecast weather, including visibility, wind, and sea state for the port of departure, all ports of call, and the destination (also see paragraphs (a)(7) of section 164.78 and (b) of section 164.82);

(1932) (iii) Data on tides and currents for the port of departure, all ports of call, and the destination, and the river staged and forecast, if appropriate;

(1933) (iv) Forward and after drafts of the barge or barges and under-keel and vertical clearances (air-gaps) for all bridges, ports, and berthing areas;

(1934) (v) Pre-departure checklists;

(1935) (vi) Calculated speed and estimated time of arrival at proposed waypoints;

(1936) (vii) Communication contacts at any Vessel Traffic Services, bridges, and facilities, and any port specific requirements for VHF radio;

(1937) (viii) Any master's or operator's standings orders detailing closest points of approach, special conditions, and critical maneuvers; and

(1938) (ix) Whether the towing vessel has sufficient power to control the tow under all foreseeable circumstances.

**§164.82 Maintenance, failure, and reporting.**

(1939) (a) Maintenance. The owner, master, or operator of each towing vessel shall maintain operative the navigational-safety equipment required by §164.72.

(1940) (b) Failure. If any of the navigational-safety equipment required by §164.72 fails during a voyage, the owner, master, or operator of the towing vessel shall exercise due diligence to repair it at the earliest practicable time. He or she shall enter its failure in the log or other record carried on board. The failure of equipment, in itself, does not constitute a violation of this rule; nor does it constitute unseaworthiness; nor does it obligate an owner, master, or operator to moor or anchor the vessel. However, the owner, master, or operator shall consider the state of the equipment-along with such factors as weather, visibility, traffic, and the dictates of

good seamanship-in deciding whether it is safe for the vessel to proceed.

(1941) (c) Reporting. The owner, master, or operator of each towing vessel whose equipment is inoperative or otherwise impaired while the vessel is operating within a Vessel Traffic Service (VTS) Area shall report the fact as required by 33 CFR 161.124. (33 CFR 161.124 requires that each user of a VTS report to the Vessel Traffic Center as soon as practicable:

(1942) (1) Any absence or malfunction of vessel-operating equipment for navigational safety, such as propulsion machinery, steering gear, radar, gyrocompass, echo depth-sounding or other sounding device, automatic dependent surveillance equipment, or navigational lighting;

(1943) (2) Any condition on board the vessel likely to impair navigation, such as shortage of personnel or lack of current nautical charts or maps, or publications; and

(1944) (3) Any characteristics of the vessel that affect or restrict the maneuverability of the vessel, such as arrangement of cargo, trim, loaded condition, under-keel clearance, and speed.)

(1945) (d) Deviation and authorization. The owner, master, or operator of each towing vessel unable to repair within 96 hours an inoperative marine radar required by §164.72(a) shall so notify the Captain of the Port (COTP) and shall seek from the COTP both a deviation from the requirements of this section and an authorization for continued operation in the area to be transited. Failure of redundant navigational-safety equipment, including but not limited to failure of one of two installed radars, where each satisfies §164.72(a), does not necessitate either a deviation or an authorization.

(1946) (1) The initial notice and request for a deviation and an authorization may be spoken, but the request must also be written. The written request must explain why immediate repair is impracticable, and state when and by whom the repair will be made.

(1947) (2) The COTP, upon receiving even a spoken request, may grant a deviation and an authorization from any of the provisions of §§164.70 through 164.82 for a specified time if he or she decides that they would not impair the safe navigation of the vessel under anticipated conditions.

## Part 165–Regulated Navigation Areas and Limited Access Areas

## Subpart A–General

### §165.1–Purpose of part.

(1948) The purpose of this part is to–

(1949) (a) Prescribe procedures for establishing different types of limited or controlled access areas and regulated navigation areas;

(1950) (b) Prescribe general regulations for different types of limited or controlled access areas and regulated navigation areas;

(1951) (c) Prescribe specific requirements for established areas; and

(1952) (d) List specific areas and their boundaries.

### §165.5 Establishment procedures.

(1953) (a) A safety zone, security zone, or regulated navigation area may be established on the initiative of any authorized Coast Guard official.

(1954) (b) Any person may request that a safety zone, security zone, or regulated navigation area be established. Except as provided in paragraph (c) of this section, each request must be submitted in writing to either the Captain of the Port or District Commander having jurisdiction over the location as described in 33 CFR 3, and include the following:

(1955) (1) The name of the person submitting the request;

(1956) (2) The location and boundaries of the safety zone, security zone, or regulated navigation area;

(1957) (3) The date, time, and duration that the safety zone, security zone, or regulated navigation area should be established;

(1958) (4) A description of the activities planned for the safety zone, security zone, or regulated navigation area;

(1959) (5) The nature of the restrictions or conditions desired; and

(1960) (6) The reason why the safety zone, security zone, or regulated navigation area is necessary.

(1961) (Requests for safety zones, security zones, and regulated navigation areas are approved by the Office of Management and Budget under control number 1625-0020.)

(1962) (c) Safety Zones and Security Zones. If, for good cause, the request for a safety zone or security zone is made less than 5 working days before the zone is to be established, the request may be made orally, but it must be followed by a written request within 24 hours.

### §165.7 Notification.

(1963) (a) The establishment of these limited access areas and regulated navigation areas is considered rulemaking. The procedures used to notify persons of the establishment of these areas vary depending upon the circumstances and emergency conditions. Notification may be made by marine broadcasts, local notice to mariners, local news media, distribution in leaflet form, and on-scene oral notice, as well as publication in the Federal Register.

(1964) (b) Notification normally contains the physical boundaries of the area, the reasons for the rule, its estimated duration, and the method of obtaining authorization to enter the area, if applicable, and special navigational rules, if applicable.

(1965) (c) Notification of the termination of the rule is usually made in the same form as the notification of its establishment.

**§165.8 Geographic coordinates.**

(1966) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

**§165.9 Geographic application of limited and controlled access areas and regulated navigation areas.**

(1967) (a) General. The geographic application of the limited and controlled access areas and regulated navigation areas in this part are determined based on the statutory authority under which each is created.

(1968) (b) Safety zones and regulated navigation areas. These zones and areas are created under the authority of the Ports and Waterways Safety Act, 33 U.S.C. 1221–1232. Safety zones established under 33 U.S.C. 1226 and regulated navigation areas may be established in waters subject to the jurisdiction of the United States as defined in §2.38 of this chapter, including the territorial sea to a seaward limit of 12 nautical miles from the baseline.

(1969) (c) Security zones. These zones have two sources of authority–the Ports and Waterways Safety Act, 33 U.S.C. 1221–1232, and the Act of June 15, 1917, as amended by both the Magnuson Act of August 9, 1950 ("Magnuson Act"), 50 U.S.C. 191–195, and sec. 104 the Maritime Transportation Security Act of 2002 (Pub. L. 107-295, 116 Stat. 2064). Security zones established under either 33 U.S.C. 1226 or 50 U.S.C. 191 may be established in waters subject to the jurisdiction of the United States as defined in §2.38 of this chapter, including the territorial sea to a seaward limit of 12 nautical miles from the baseline.

(1970) (d) Naval vessel protection zones. These zones are issued under the authority of 14 U.S.C. 91 and 633 and may be established in waters subject to the jurisdiction of the United States as defined in §2.38 of this chapter, including the territorial sea to a seaward limit of 12 nautical miles from the baseline.

## Subpart B–Regulated Navigation Areas

**§165.10 Regulated navigation area.**

(1971) A regulated navigation area is a water area within a defined boundary for which regulations for vessels navigating within the area have been established under this part.

**§165.11 Vessel operating requirements (regulations).**

(1972) Each District Commander may control vessel traffic in an area which is determined to have hazardous conditions, by issuing regulations–

(1973) (a) Specifying times of vessel entry, movement, or departure to, from, within, or through ports, harbors, or other waters;

(1974) (b) Establishing vessel size, speed, draft limitations, and operating conditions; and

(1975) (c) Restricting vessel operation, in a hazardous area or under hazardous conditions, to vessels which have particular operating characteristics or capabilities which are considered necessary for safe operation under the circumstances.

**§165.13 General regulations.**

(1976) (a) The master of a vessel in a regulated navigation area shall operate the vessel in accordance with the regulations contained in Subpart F.

(1977) (b) No person may cause or authorize the operation of a vessel in a regulated navigation area contrary to the regulations in this Part.

## Subpart C–Safety Zones

**§165.20 Safety zones.**

(1978) A Safety Zone is a water area, shore area, or water and shore area to which, for safety or environmental purposes, access is limited to authorized persons, vehicles, or vessels. It may be stationary and described by fixed limits or it may be described as a zone around a vessel in motion.

**§165.23 General regulations.**

(1979) Unless otherwise provided in this part–

(1980) (a) No person may enter a safety zone unless authorized by the COTP or the District Commander;

(1981) (b) No person may bring or cause to be brought into a safety zone any vehicle, vessel, or object unless authorized by the COTP or the District Commander;

(1982) (c) No person may remain in a safety zone or allow any vehicle, vessel, or object to remain in a safety zone unless authorized by the COTP or the District Commander; and

(1983) (d) Each person in a safety zone who has notice of a lawful order or direction shall obey the order or direction of the COTP or District Commander issued to carry out the purposes of this subpart.

## Subpart D–Security Zones

**§165.30 Security zones.**

(1984) (a) A security zone is an area of land, water, or land and water which is so designated by the Captain of the

Port or District Commander for such time as is necessary to prevent damage or injury to any vessel or waterfront facility, to safeguard ports, harbors, territories, or waters of the United States or to secure the observance of the rights and obligations of the United States.

(1985) (b) The purpose of a security zone is to safeguard from destruction, loss, or injury from sabotage or other subversive acts, accidents, or other causes of a similar nature–

(1986) (1) Vessels,

(1987) (2) Harbors,

(1988) (3) Ports and

(1989) (4) Waterfront facilities–in the United States and all territory and water, continental or insular, that is subject to the jurisdiction of the United States.

**§165.33 General regulations.**

(1990) Unless otherwise provided in the special regulations in Subpart F of this part–

(1991) (a) No person or vessel may enter or remain in a security zone without the permission of the Captain of the Port;

(1992) (b) Each person and vessel in a security zone shall obey any direction or order of the Captain of the Port;

(1993) (c) The Captain of the Port may take possession and control of any vessel in the security zone;

(1994) (d) The Captain of the Port may remove any person, vessel, article, or thing from a security zone;

(1995) (e) No person may board, or take or place any article or thing on board, any vessel in a security zone without the permission of the Captain of the Port; and

(1996) (f) No person may take or place any article or thing upon any waterfront facility in a security zone without the permission of the Captain of the Port.

## Subpart E–Restricted Waterfront Area

**§165.40 Restricted Waterfront Areas.**

(1997) The Commandant, may direct the COTP to prevent access to waterfront facilities, and port and harbor areas, including vessels and harbor craft therein. This section may apply to persons who do not possess the credentials outlined in 33 CFR 125.09 when certain shipping activities are conducted that are outlined in 33 CFR 125.15.

**§165.501 Chesapeake Bay entrance and Hampton Roads, VA and adjacent waters-Regulated Navigation Area.**

(1998) (a) Location. The waters enclosed by the shoreline and the following lines are a Regulated Navigation Area:

(1999) (1) Offshore zone. A line drawn due East from the mean low water mark at the North Carolina and Virginia border at 36°33'03"N., 75°52'00"W., to the Territorial Seas boundary line at 36°33'05"N., 75°36'51"W., thence generally Northeastward along the Territorial Seas boundary line to 38°01'39"N., 74°57'18"W., thence due West to the mean low water mark at the Maryland and Virginia border at 38°01'39"N., 75°14'30"W., thence South along the mean low water mark on the Virginia coast, and eastward of the Colregs Demarcation Lines across Chincoteague Inlet, Assawoman Inlet, Gargathy Inlet, Metompkin Inlet, Wachapreague Inlet, Quinby Inlet, Great Machipongo Inlet, Sand Shoal Inlet, New Inlet, Ship Shoal Inlet and Little Inlet, to the Colregs Demarcation Line across the mouth of Chesapeake Bay, continuing south along the Virginia low water mark and eastward of the Colregs Demarcation Line across Rudee Inlet to the point of beginning. All positions reference NAD 83.

(2000) (2) Inland zone. The waters enclosed by the shoreline and the following lines:

(2001) (i) A line drawn across the entrance to Chesapeake Bay between Wise Point and Cape Charles Light, and then continuing to Cape Henry Light.

(2002) (ii) A line drawn across the Chesapeake Bay between Old Point Comfort Light and Cape Charles City Range "A" Rear Light.

(2003) (iii) A line drawn across the James River along the eastern side of U.S. Route 17 highway bridge, between Newport News and Isle of Wight County, Virginia.

(2004) (iv) A line drawn across Chuckatuck Creek along the northern side of the north span of the U.S. Route 17 highway bridge, between Isle of Wight County and Suffolk, Virginia.

(2005) (v) A line drawn across the Nansemond River along the northern side of the Mills Godwin (U.S. Route 17) Bridge, Suffolk, Virginia.

(2006) (vi) A line drawn across the mouth of Bennetts Creek, Suffolk, Virginia.

(2007) (vii) A line drawn across the Western Branch of the Elizabeth River along the eastern side of the West Norfolk Bridge, Portsmouth, Virginia.

(2008) (viii) A line drawn across the Southern Branch of the Elizabeth River along the northern side of the I-64 highway bridge, Chesapeake, Virginia.

(2009) (ix) A line drawn across the Eastern Branch of the Elizabeth River along the western side of the west span of the Campostella Bridge, Norfolk, Virginia.

(2010) (x) A line drawn across the Lafayette River along the western side of the Hampton Boulevard Bridge, Norfolk, Virginia.

(2011) (xi) A line drawn across Little Creek along the eastern side of the Ocean View Avenue (U.S. Route 60) Bridge, Norfolk, Virginia.

(2012) (xii) A line drawn across Lynnhaven Inlet along the northern side of Shore Drive (U.S. Route 60) Bridge, Virginia Beach, Virginia.

(2013) (b) Definitions. In this section:

(2014) CBBT means the Chesapeake Bay Bridge Tunnel.

(2015) Coast Guard Patrol Commander is a Coast Guard commissioned, warrant or petty officer who has been designated by the Commander, Coast Guard Sector Hampton Roads.

(2016) Designated representative of the Captain of the Port means a person, including the duty officer at the Coast Guard Sector Hampton Roads, the Joint Harbor Operations Center watchstander, or the Coast Guard or Navy Patrol Commander who has been authorized by the Captain of the Port to act on his or her behalf and at his or her request to carry out such orders and directions as needed. All patrol vessels shall display the Coast Guard Ensign at all times when underway.

(2017) I-664 Bridge Tunnel means the Monitor Merrimac Bridge Tunnel.

(2018) Inland waters means waters within the COLREGS Line of Demarcation.

(2019) Thimble Shoal Channel consists of the waters bounded by a line connecting Thimble Shoal Channel Lighted Bell Buoy 1TS, thence to Thimble Shoal Lighted Gong Buoy 17, thence to Thimble Shoal Lighted Buoy 19, thence to Thimble Shoal Lighted Buoy 21, thence to Thimble Shoal Lighted Buoy 22, thence to Thimble Shoal Lighted Buoy 18, thence to Thimble Shoal Lighted Buoy 2, thence to the beginning.

(2020) Thimble Shoal North Auxiliary Channel consists of the waters in a rectangular area 450 feet wide adjacent to the north side of Thimble Shoal Channel, the southern boundary of which extends from Thimble Shoal Channel Lighted Buoy 2 to Thimble Shoal Lighted Buoy 18.

(2021) Thimble Shoal South Auxiliary Channel consists of the waters in a rectangular area 450 feet wide adjacent to the south side of Thimble Shoal Channel, the northern boundary of which extends from Thimble Shoal Channel Lighted Bell Buoy 1TS, thence to Thimble Shoal Lighted Gong Buoy 17, thence to Thimble Shoal Lighted Buoy 19, thence to Thimble Shoal Lighted Buoy 21.

(2022) (c) Applicability. This section applies to all vessels operating within the Regulated Navigation Area, including naval and public vessels, except vessels that are engaged in the following operations:

(2023) (1) Law enforcement.

(2024) (2) Servicing aids to navigation.

(2025) (3) Surveying, maintenance, or improvement of waters in the Regulated Navigation Area.

(2026) (d) Regulations.

(2027) (1) Anchoring restrictions. No vessel over 65 feet long may anchor or moor in the inland waters of the Regulated Navigation Area outside an anchorage designated in Sec. 110.168 of this title, with these exceptions:

(2028) (i) The vessel has the permission of the Captain of the Port.

(2029) (ii) Only in an emergency, when unable to proceed without endangering the safety of persons, property, or the environment, may a vessel anchor in a channel.

(2030) (iii) A vessel may not anchor within the confines of Little Creek Harbor, Desert Cove, or Little Creek Cove without the permission of the Captain of the Port. The Captain of the Port shall consult with the Commander, Naval Amphibious Base Little Creek, before granting permission to anchor within this area.

(2031) (2) Anchoring detail requirements. A self-propelled vessel over 100 gross tons, which is equipped with an anchor or anchors (other than a tugboat equipped with bow fenderwork of a type of construction that prevents an anchor being rigged for quick release), that is underway within two nautical miles of the CBBT or the I-664 Bridge Tunnel shall station its personnel at locations on the vessel from which they can anchor the vessel without delay in an emergency.

(2032) (3) Secondary towing rig requirements on inland waters.

(2033) (i) A vessel over 100 gross tons may not be towed in the inland waters of the Regulated Navigation Area unless it is equipped with a secondary towing rig, in addition to its primary towing rig, that:

(2034) (A) Is of sufficient strength for towing the vessel.

(2035) (B) Has a connecting device that can receive a shackle pin of at least two inches in diameter.

(2036) (C) Is fitted with a recovery pickup line led outboard of the vessel's hull.

(2037) (ii) A tow consisting of two or more vessels, each of which is less than 100 gross tons, that has a total gross tonnage that is over 100 gross tons, shall be equipped with a secondary towing rig between each vessel in the tow, in addition to its primary towing rigs, while the tow is operating within this Regulated Navigation Area. The secondary towing rig must:

(2038) (A) Be of sufficient strength for towing the vessels.

(2039) (B) Have connecting devices that can receive a shackle pin of at least two inches in diameter.

(2040) (C) Be fitted with recovery pickup lines led outboard of the vessel's hull.

(2041) (4) Thimble Shoals Channel controls.

(2042) (i) A vessel drawing less than 25 feet may not enter the Thimble Shoal Channel, unless the vessel is crossing the channel. Masters should consider the squat of their vessel based upon vessel design and environmental conditions. Channel crossings shall be made as perpendicular to the channel axis as possible.

(2043) (ii) Except when crossing the channel, a vessel in the Thimble Shoal North Auxiliary Channel shall proceed in a westbound direction.

(2044) (iii) Except when crossing the channel, a vessel in the Thimble Shoal South Auxiliary Channel shall proceed in an eastbound direction.

(2045) (5) Restrictions on vessels with impaired maneuverability.

(2046) (i) Before entry. A vessel over 100 gross tons, whose ability to maneuver is impaired by heavy weather, defective steering equipment, defective main propulsion machinery, or other damage, may not enter the Regulated Navigation Area without the permission of the Captain of the Port.

(2047) (ii) After entry. A vessel over 100 gross tons, which is underway in the Regulated Navigation Area, that has its ability to maneuver become impaired for any reason, shall, as soon as possible, report the impairment to the Captain of the Port.

(2048) (6) Requirements for navigation charts, radars, and pilots. No vessel over 100 gross tons may enter the Regulated Navigation Area, unless it has on board:

(2049) (i) Corrected charts of the Regulated Navigation Area. Instead of corrected paper charts, warships or other vessels owned, leased, or operated by the United States Government and used only in government non-commercial service may carry electronic charting and navigation systems that have met the applicable agency regulations regarding navigation safety.

(2050) (ii) An operative radar during periods of reduced visibility;

(2051) (iii) When in inland waters, a pilot or other person on board with previous experience navigating vessels on the waters of the Regulated Navigation Area.

(2052) (7) Emergency procedures.

(2053) (i) Except as provided in paragraph (d)(7)(ii) of this section, in an emergency any vessel may deviate from the regulations in this section to the extent necessary to avoid endangering the safety of persons, property, or the environment.

(2054) (ii) A vessel over 100 gross tons with an emergency that is located within two nautical miles of the CBBT or I-664 Bridge Tunnel shall notify the Captain of the Port of its location and the nature of the emergency, as soon as possible.

(2055) (8) Vessel speed limits.

(2056) (i) Little Creek. A vessel may not proceed at a speed over five knots between the Route 60 bridge and the mouth of Fishermans Cove (Northwest Branch of Little Creek).

(2057) (ii) Southern Branch of the Elizabeth River. A vessel may not proceed at a speed over six knots between the junction of the Southern and Eastern Branches of the Elizabeth River and the Norfolk and Portsmouth Belt Line Railroad Bridge between Chesapeake and Portsmouth, Virginia.

(2058) (iii) Norfolk Harbor Reach. Nonpublic vessels of 300 gross tons or more may not proceed at a speed over 10 knots between the Elizabeth River Channel Lighted Gong Buoy 5 of Norfolk Harbor Reach (southwest of Sewells Point) at approximately 36°58'00"N., 076°20'00"W, and gated Elizabeth River Channel Lighted Buoys 17 and 18 of Craney Island Reach (southwest of Norfolk International Terminal at approximately 36°54'17"N., and 076°20'11"W.

(2059) (9) Port security requirements. Vessels in excess of 300 gross tons, including tug and barge combinations in excess of 300 gross tons (combined), shall not enter the Regulated Navigation Area, move within the Regulated Navigation Area, or be present within the Regulated Navigation Area, unless they comply with the following requirements:

(2060) (i) Obtain authorization to enter the Regulated Navigation Area from the designated representative of the Captain of the Port prior to entry. All vessels entering or remaining in the Regulated Navigation Area may be subject to a Coast Guard boarding.

(2061) (ii) Ensure that no person who is not a permanent member of the vessel's crew, or a member of a Coast Guard boarding team, boards the vessel without a valid purpose and photo identification.

(2062) (iii) Report any departure from or movement within the Regulated Navigation Area to the designated representative of the Captain of the Port prior to getting underway.

(2063) (iv) The designated representative of the Captain of the Port is the Sector Command Center (SCC)-Joint Harbor Operations Center (JHOC) which shall be contacted on VHF-FM channel 12, or by calling (757) 668-5555.

(2064) (v) In addition to the authorities listed in this part, this paragraph is promulgated under the authority under 33 U.S.C. 1226.

(2065) (e) Waivers.

(2066) (1) The Captain of the Port may, upon request, waive any regulation in this section.

(2067) (2) An application for a waiver must state the need for the waiver and describe the proposed vessel operations.

(2068) (f) Control of vessels within the regulated navigation area.

(2069) (1) When necessary to prevent damage, destruction or loss of any vessel, facility or port infrastructure, the Captain of the Port may direct the movement of vessels or issue orders requiring vessels to anchor or moor in specific locations.

(2070) (2) If needed for the maritime, commercial or security interests of the United States, the Captain of the Port may order a vessel to move from the location in which it is anchored to another location within the Regulated Navigation Area.

(2071) (3) The master of a vessel within the Regulated Navigation Area shall comply with any orders or directions issued to the master's vessel by the Captain of the Port.

### §165.514 Safety Zone: Atlantic Intracoastal Waterway and Connecting Waters, Vicinity of Marine Corps Base Camp Lejeune, North Carolina.

(2072) (a) Location. The following area is a safety zone: All waters of the Atlantic Intracoastal Waterway (AICW) and connecting waters, from Bogue Sound-New River Daybeacon 58 (LLNR 39210) at approximate position 34°37'57"N., 77°12'18"W., and continuing in the AICW southwest to Bogue Sound–New River Daybeacon 70 (LLNR 39290) at approximate position 34°33'08"N., 77°20'34"W. All coordinates reference Datum: NAD 1983.

(2073) (b) Regulations. Notwithstanding the provisions of 33 CFR 334.440 (e)(2)(i), no vessel may enter the safety zone described in Paragraph (a) of this section while weapons firing exercises are in progress, except as provided in Paragraph (c) of this section or unless permitted by the Captain of the Port (COTP) Nort Carolina.

(2074) (1) Red warning flags or red warning lights will be displayed on towers located at both ends of the safety zone (Bear Creek and Cedar Point) while firing exercises are in progress. The flags or lights will be displayed by 8 a.m. on days where firing exercises are scheduled, and will be removed at the end of the firing exercise.

(2075) (2) A Coast Guard or U.S. Navy vessel will patrol each end of the safety zone to ensure the public is aware that firing exercises are in progress and that the firing area is clear of vessel traffic before weapons are fired.

(2076) (c) General information.

(2077) (1) Announcements. The COTP North Carolina will announce the specific times and locations of firing exercises by Broadcast Notice to Mariners and Local Notice to Mariners. Normally, weapons firing for each firing exercise is limited to a 2-nautical-mile portion of the safety zone. The COTP may issue general permission to transit all or specified parts of the safety zone outside of the actual firing area or if firing is temporarily stopped. This general permission will be announced in a Local Notice to Mariners and Broadcast Notice to Mariners.

(2078) (2) Camp Lejeune Artillery Operations. Artillery weapons firing over the AICW from Marine Corps Base Camp Lejeune will be suspended and vessels permitted to transit the specified 2-nautical-mile firing area for a 1-hour period beginning at the start of each odd-numbered hour local time (e.g., 9 a.m.; 1 p.m.). A vessel may not enter the specified firing area unless it will be able to complete its transit of the firing area before firing exercises are scheduled to re-start.

(2079) (3) Atlantic Ocean Naval Gunnery live fire operations. Naval gunnery live fire operations over the AICW from off shore on the Atlantic Ocean may be conducted for periods not to exceed 4 hours, then suspended and vessels permitted to transmit the specified two-mile firing area for a minimum of one hour before firing may resume. A vessel may not enter the specified firing area unless it will be able to complete its transit of the firing area before firing exercises are scheduled to re-start.

(2080) (d) Contact information. U.S. Navy safety vessels may be contacted on VHF marine band radio channels 13 (156.65 MHz) and 16 (156.8 MHz). The Captain of the Port may be contacted at Sector North Carolina by telephone at 877-229-0770 or 910-770-2200.

### §165.515 Safety Zone: Cape Fear River, Wilmington, North Carolina.

(2081) (a) Location. The following area is a safety zone:

(2082) (1) The waters of the Cape Fear River bounded by a line connecting the following points:

(2083) 34°14'12"N., 77°57'10"W.

(2084) 34°14'12"N., 77°57'06"W.

(2085) 34°13'54"N., 77°57'00"W.

(2086) 34°13'54"N., 77°57'06"W.

(2087) (2) The safety zone boundary can be described as follows: starting at the stern of the Battleship USS NORTH CAROLINA, across the Cape Fear River to the north end of the Coast Guard moorings, down along the east bank of the Cape Fear River to the bow of the tug CAPTAIN JOHN TAXIS Memorial (Chandler's Wharf), back across the Cape Fear River to Eagle Island, and then up along the west bank of the Cape Fear River to the stern of the Battleship USS NORTH CAROLINA.

(2088) (b) Definitions. The designated representative of the Captain of the Port is any Coast Guard commissioned, warrant, or petty officer who has been authorized by the Captain of the Port, North Carolina to act on his behalf.

(2089) (c) General information. The Captain of the Port and the Command Duty Officer at Sector North Carolina can be contacted at telephone number 877-229-0770 or 910-772-2200. The Coast Guard Patrol Commander and the senior boarding officer on each vessel enforcing the safety zone can be contacted on VHF-FM channels 16 and 81.

(2090) (d) Regulation. Except for persons or vessels authorized by the Coast Guard Patrol Commander, no person or vessel may enter or remain in the regulated area.

(2091) (1) The operator of any vessel in the immediate vicinity of this safety zone shall:

(2092) (i) Stop the vessel immediately upon being directed to do so by any commissioned, warrant, or petty officer on board a vessel displaying a Coast Guard Ensign.

(2093) (ii) Proceed as directed by any commissioned, warrant, or petty officer on board a vessel displaying a Coast Guard Ensign.

(2094) (2) Any spectator vessel may anchor outside of the regulated area specified in paragraph (a) of the section, but may not block a navigable channel.

(2095) (e) Effective date. The Captain of the Port will issue a Marine Safety Information Broadcast and a Notice to Mariners to notify the public when this section is in effect.

### §165.518 Security Zone; Waters of the Fifth Coast Guard District.

(2096) (a) Definitions. As used in this section–

(2097) Designated Representative means any U.S. Coast Guard commissioned, warrant or petty officer who has been authorized by the District Commander or local Captain of the Port (COTP), as defined in 33 CFR part 3, subpart 3.25, to act on his or her behalf.

(2098) Escorted vessel means a vessel, other than a U.S. naval vessel as defined in §165.2015, that is accompanied by one or more Coast Guard assets or Federal, State or local law enforcement agency assets as listed below:

(2099) (1) Coast Guard surface or air asset displaying the Coast Guard insignia.

(2100) (2) Coast Guard Auxiliary surface asset displaying the Coast Guard Auxiliary insignia.

(2101) (3) State and/or local law enforcement asset displaying the applicable agency markings and or equipment associated with the agency.

(2102) State and/or local law enforcement officers means any State or local government law enforcement officer who has authority to enforce State criminal laws.

(2103) (b) Location. The following area is a security zone: 500-yard radius around escorted vessels in the navigable waters of the Fifth Coast Guard District as defined in 33 CFR 3.25–1, from surface to bottom.

(2104) (c) Regulations. (1) No vessel may approach within 500 yards of an escorted vessel within the navigable waters of the Fifth Coast Guard District, unless traveling at the minimum speed necessary to navigate safely.

(2105) (2) No vessel may enter within a 100-yard radius of an escorted vessel within the navigable waters of the Fifth Coast Guard District, without approval from the District Commander, Captain of the Port or their designated representatives.

(2106) (3) Moored or anchored vessels, which are overtaken by a moving zone, must remain stationary at their location until the escorted vessel maneuvers at least 500 yards past.

(2107) (4) Vessels restricted in their ability to maneuver may request permission of the District Commander, Captain of the Port or designated representative to enter the security zone in order to ensure safe passage in accordance with the Navigation Rules in 33 CFR chapter 1, subparts D and E.

(2108) (5) The local COTP may notify the maritime and general public by marine information broadcast of the periods during which individual security zones have been activated by providing notice in accordance with 33 CFR 165.7.

(2109) (6) When moored, a security zone around an escorted vessel may also be enforced by Coast Guard, State or Local law enforcement personnel shoreside.

(2110) (7) Persons desiring to transit within 100 yards of an escorted vessel in the Fifth Coast Guard District must contact the local Captain of the Port on VHF channel 16 (156.800 MHz),VHF channel 13 (156.650 MHz) or at telephone numbers:

(2111) Philadelphia: 215-271-4807

(2112) Baltimore: 410-576-2693

(2113) Hampton Roads: 757-668-5555 or 757-484-8192

(2114) North Carolina: 877-229-0770 or 910-772-2200

(2115) (8) If permission is granted to transit within 100 yards of an escorted vessel, all persons and vessels must comply with the instructions of the District Commander, Captain of the Port or their designated representative.

### §165.530 Safety Zone: Cape Fear and Northeast Cape Fear Rivers, NC.

(2116) (a) Location. The following area is a moving safety zone during the specified conditions: The waters of the Cape Fear and Northeast Cape Fear Rivers for 500 yards ahead and astern, and 75 yards abeam of a vessel carrying hazardous materials when designated by the Captain of the Port, North Carolina.

(2117) (b) General Information. (1)) The Captain of the Port and the Command Duty Officer at Sector North Carolina can be contacted at telephone number 877-229-0770 or 910-772-2200. The Coast Guard Patrol Commander enforcing the safety zone can be contacted on VHF–FM channels 16 and 81.

(2118) (2) The Captain of the Port may authorize and designate any Coast Guard commissioned, warrant, or petty officer to act on his behalf in enforcing this safety zone.

(2119) (3) Sector North Carolina will notify the maritime community of periods during which this safety zone will be in effect by providing advance notice of scheduled arrivals and departures of loaded hazardous materials vessels via a marine broadcast Notice to Mariners.

(2120) (c) Regulation. The general regulations governing safety zones contained in §165.23 apply.

### §165.540 Regulated Navigation Area; Cape Fear River, Northeast Cape Fear River, Wilmington, North Carolina.

(2121) (a) Description of the Regulated Navigation Area (RNA). The RNA encompasses all waters of the Cape Fear River and Northeast Cape Fear River from the intersection of Bald Head Shoal Channel and Smith Island Channel (centerline coordinates 33°52'24.028"N., 78°00'29.624"W (NAD 83)) to mile 26.7 on the Northeast Cape Fear River.

(2122) (b) Work areas. Dredging work within the RNA will be conducted in five distinct areas: Ocean Bar II, Horseshoe Shoal, Passing Lane & Anchorage Basin, Big Island, and the Northeast Cape Fear River. Drilling or blasting is expected to occur within the Passing Lane & Anchorage Basin, Big Island, and the Northeast Cape Fear River work areas. The blast sites within the RNA, will be identified and made available to the public through: Broadcast Notices to Mariners or Local Notices to Mariners (Local Notices to Mariners are available online at www.navcen.uscg.gov/lnm/d5/); direct contact with the control vessel on channel 16 VHF–FM; direct contact with the contractor; or through the Captain of the Port on VHF marine Band Radio, channels 13 and 16; or at telephone number 910-772-2200. In addition, dredge and blasting companies will have a control vessel present at the site of each blast.

(2123) (c) Enforcement period. This section will be enforced during the months of August, September, October, November, December, and January, each year. This rule will expire on January 31, 2006.

(2124) (d) Definitions.

(2125) Active work area means a work area in which blasting, drilling, or dredging operations are currently taking place.

(2126) Blast site means the area where explosive material is handled during loading, including the perimeter formed by the loaded blast holes and fifty (50) feet (15.2 meters) in all directions from loaded holes.

(2127) Blasting operations means the detonation of explosives on the river bottom.

(2128) Captain of the Port means the Coast Guard officer designated by the Commandant to command the Captain of the Port Zone as described in 33 CFR 3.25–20.

(2129) Control vessel means the vessel at an active work area which coordinates operations within the active work area.

(2130) Hangfire means a blast that fails to detonate at initiation, but detonates at a later time.

(2131) Mile means measured as nautical miles.

(2132) Misfire means a blast that fails to detonate completely after an attempt at initiation, also the explosive material that failed to detonate as planned.

(2133) RNA means Regulated Navigation Area.

(2134) Work area means those places within the RNA where dredging, drilling, and blasting shall be conducted.

(2135) (e) Description of work areas in the RNA. (1) Ocean Bar II, mouth of Cape Fear. The work area includes: Part of Bald Head Shoal Channel, Smith Island Channel, Baldhead Caswell Channel, Southport Channel, Battery Island Channel, Lower Swash Channel and the majority of Snows Marsh Channel. The downstream end of the work area (centerline coordinates: 33°50'43.668"N., 78°01'40.068"W (NAD 1983)) is located southeast of Cape Fear River Channel Lighted Buoy 8 (LL 30350), approximately 2,560 feet east of the centerline of the existing Bald Head Shoal Channel. Upstream end of the work area is located 1,200 feet downstream of the intersection of Snows Marsh Channel and Horseshoe Shoal Channel at turn six (mile 6.5, approximately 1,150 feet downstream of Cape Fear River Channel Lighted Buoy 25 (LL 30530/39965)).

(2136) (2) Horseshoe Shoal. The work area includes: Horseshoe Shoal Channel and part of Snows Marsh Channel. Downstream end of the work area is located 1,200 feet downstream of the intersection of Snows Marsh Channel and Horseshoe Shoal Channel (mile 6.5, approximately 1,150 feet downstream of Cape Fear River Channel Lighted Buoy 25 (LL 30530/39965)). Upstream end of the work area is located at the intersection of Horseshoe Shoal Channel and Reaves Point Channel (mile 7.7, at about Cape Fear River Channel Lighted Buoy 27 (LL 30550/39945)).

(2137) (3) Big Island. The work area includes: Part of Keg Island Channel, Lower Big Island Channel, Upper Big Island Channel, and part of Lower Brunswick Channel. Downstream end of the work area is approximately 2,230 feet upstream of the intersection of Upper Lilliput Channel and Keg Island Channel (mile 16.2, approximately 1,320 feet downstream of Cape Fear River Channel Lighted Buoy 46 (LL 30765) and approximately 2,300 feet upstream of Cape Fear River Channel Lighted Buoy 44 (LL 30750)). Upstream end of the work area is approximately 2,680 feet upstream of intersection of Upper Big Island Channel and Lower Brunswick Channel (mile 18.7, approximately 1,620 feet upstream of Cape Fear River Channel Lighted Buoy 56 (LL 30830) and approximately 590 feet downstream of the Carolina Power & Light Company (CP&L) overhead power line crossing).

(2138) (4) Passing Lane and Anchorage Basin. There are two separate work areas for this contact, separated by the Big Island Contract.

(2139) (i) Passing Lane work area is located immediately downstream of the Big Island contract work area. The work area includes: Reaves Point Channel, Lower Midnight Channel, Upper Midnight Channel, Lilliput Channel, and part of Keg Island Channel. Downstream end of Passing Lane work area is the intersection of Horseshoe Shoal Channel and Reaves Point Channel (mile 7.7, at about Cape Fear River Channel Lighted Buoy 27 (LL 30550/39945)). Upstream end of the Passing Lane work area is approximately 2,230 feet upstream of intersection of Upper Lilliput Channel and keg Island Channel (mile 16.2, approximately 1,320 feet downstream of Cape Fear River Channel Lighted Buoy 46 (LL 30765) and approximately 2,300 feet upstream of Cape Fear River Channel Lighted Buoy 44 (LL 30750)).

(2140) (ii) Anchorage Basin work area is located immediately upstream of the Big Island contract work area. The work area includes: Part of Lower Brunswick Channel, Fourth East Jetty Channel, Between Channel, and Anchorage Basin Channel. Downstream end of Anchorage Basin work area is approximately 2,680 feet upstream of intersection of Upper Big Island Channel and Lower Brunswick Channel (mile 18.7, approximately 1,620 feet upstream of Cape Fear River Channel Lighted Buoy 56 (LL 30830) and approximately 590 feet downstream of the CP&L overhead power line crossing). Upstream end of Anchorage Basin work area is the Cape Fear Memorial Bridge (mile 23.6).

(2141) (5) Northeast Cape Fear River. The downstream end of the work area is the Cape Fear Memorial Bridge (mile 23.6). Upstream end of the work area (approximately mile 26.7) is on the Northeast Cape Fear River and is approximately 700 feet upstream of the turning basin located opposite Koch Sulfur Products Co. and approximately 90 feet downstream of the submerged gas pipeline crossing.

(2142) (f) Regulations. (1) Blasting, drilling, and dredging operations raise many safety issues for vessels transiting the RNA. All mariners are reminded to exercise caution while transiting or operating in the RNA.

(2143) (2) Active work areas, control vessels, and blast sites will be identified via Broadcast Notices to Mariners or Local Notices to Mariners. The Local Notice to Mariners is available on-line at www.navcen.uscg.gov/lnm/d5/. Control vessels shall monitor channel 16 VHF–FM.

(2144) (3) The following requirements apply to all vessels.

(2145) (i) All vessels shall inform themselves of the active work areas prior to entering the RNA.

(2146) (ii) All vessels shall contact and receive permission from the control vessel for that work area before entering the active work area.

(2147) (iii) All vessels transiting an active work area shall do so at no wake speed or the minimum speed necessary to maintain steerage.

(2148) (iv) During blasting operations all vessels are prohibited from entering an area of 500 yards surrounding the blast site. Upon notification of a misfire or hangfire, all vessels underway in the RNA shall proceed to clear the active work area in which the misfire or hangfire occurred.

(2149) (4) Vessels over 300 gross tons and tugs with tows are required to contact the COTP 12 hours before vessel movement within the RNA.

(2150) (5) Vessels meeting the notice of arrival requirement under 33 CFR 160.207 are encouraged to notify the COTP at least 48-hours before the vessel enters the RNA to facilitate scheduling and minimize delays. Updates are encouraged at least 12 hours before arriving at the RNA boundaries. The COTP may delay entry into the RNA to accommodate other commercial traffic.

(2151) (6) Vessels of 300 gross tons or greater shall be prohibited from entering the RNA when they are advised that a misfire or hangfire has occurred.

(2152) (7) For any vessel with another vessel/barge in tow transiting an active work area, the hawser or wire length of the tow shall not exceed 275 feet, measured from the towing bit on the tug to the point where the hawser or wire connects with the towed vessel or barge.

(2153) (8) Vessels of 300 gross tons or greater and tugs with tows, shall, prior to entering the RNA, ensure that they have sufficient propulsion and directional control to safely navigate the RNA under the prevailing conditions.

(2154) (9) Vessels of 300 gross tons or greater and tugs with tows are prohibited from meeting or overtaking vessels of 300 gross tons or greater or tugs with tows in active work areas or within one nautical mile of an active work area.

(2155) (10) The Captain of the Port, North Carolina may, upon written request, authorize a deviation from any regulation in this section if it is found that the proposed operations can be done safely. An application for deviation must be received not less than 48 hours before intended operation and must state the need and describe the proposal.

## Subpart F–Specific Regulated Navigation Areas and Limited Access Areas

### §165.701 Vicinity, Kennedy Space Center, Merritt Island, Florida–security zone.

(2156) (a) The water, land, and land and water within the following boundaries are a security zone–The perimeter of the Cape Canaveral Barge Canal and the Banana River at 28°24'33"N., 80°39'48"W.; then due west along the northern shoreline of the barge canal for 1,300 yards; then due north to 28°28'42"N., 80°40'30"W., on Merritt Island. From this position, the line proceeds irregularly to the eastern shoreline of the Indian River to a position 1,300 yards south of the NASA Causeway at 28°30'54"N., 80°43'42"W. (the line from the barge canal to the eastern shoreline of the Indian River is marked by a three-strand barbed-wire fence); then north along the shoreline of the Indian River to the NASA Causeway at 28°31'30"N., 80°43'48"W. The line continues west on the southern shoreline of the NASA Causeway to NASA Gate 3 (permanent), then north to the northern shoreline of the NASA Causeway and east on the northern shoreline of the causeway back to the shoreline on Merritt Island at position 28°31'36"N., 80°43'42"W.; then northwest along the shoreline to 28°41'01.2"N., 80°47'10.2"W. (Blackpoint); then due north to channel marker #6 on the Intracoastal Waterway (ICW), then northeast along the southern edge of the ICW to the western entrance to the Haulover Canal. From this point, the line continues northeast along the southern edge of the Haulover Canal to the eastern entrance to the canal; then due east to a point in the Atlantic Ocean 3 miles offshore at 28°44'42"N., 80°37'51"W.; then south along a line 3 miles from the coast to Wreck Buoy "WR6", then to Port Canaveral Channel Lighted Buoy 10, then west along the northern edge of the Port Canaveral Channel to the northeast corner of the intersection of the Cape Canaveral Barge Canal and the ICW in the Banana River at 28°24'36"N., 80°38'42"W. The line continues north along the east side of the Intracoastal Waterway to daymarker "35" thence North Westerly one quarter of a mile south of NASA Causeway East (Orsino Causeway) to the shoreline on Merritt Island at position 28°30.95'N., 80°37.6'W., then south along the shoreline to the starting point.

(2157) (b) The area described in paragraph (a) of this section is closed to all vessels and persons, except those vessels and persons authorized by the Commander, Seventh Coast Guard District, or the COTP Jacksonville, Florida, whenever space vehicles are to be launched by the United States Government from Cape Canaveral.

(2158) (c) COTP Jacksonville, Florida, closes the security zone, or specific portions of it, by means of locally promulgated notices. The closing of the area is signified by the display of a red ball from a 90-foot pole near the shoreline at approximately 28°35'00"N., 80°34'36"W., and from a 90-foot pole near the shoreline at approximately 28°25'18"N., 80°35'00"W. Appropriate Local Notices to Mariners will also be broadcast on 2670 kHz.

### §165.705 Port Canaveral Harbor, Cape Canaveral, Florida.

(2159) (a) Security Zone A-East (TRIDENT) Basin, Port Canaveral Harbor, at Cape Canaveral Air Force Station, Brevard County, Florida. All waters of the East Basin north of latitude 28°24'36"N.

(2160) (b) Security Zone B-Middle Basin, Port Canaveral Harbor, adjacent to the Navy wharf at Cape Canaveral Air Force Station, Brevard County, Florida. The waters of Port Canaveral Harbor within a line circumscribing the water approaches to the Navy wharf along the northeasterly edge of the Port Canaveral Harbor turning

basin at a distance of 200 feet from all portions of the wharf including the dolphins located 200 feet off the northwest end and 75 feet of the southeast end of the wharf.

(2161) (c) Entrance into these zones by vessels other than vessels owned or leased by the United States is prohibited without permission of the Captain of the Port, Jacksonville, Florida.

(2162) (d) The general regulations governing security zones contained in 33 CFR 165.33 apply.

**§165.708 Safety/Security Zone; Charleston Harbor and Cooper River, Charleston, SC.**

(2163) (a) Regulated area. The following boundaries are established as a safety and security zone during specified conditions:

(2164) (1) All waters 200 yards ahead and astern and 100 yards to each side of a vessel transporting nuclear materials while the vessel transits from Charleston Harbor Entrance Buoy "C" (LLNR 1885, position 32-39.6N, 079-40.9W) to the Charleston Naval Weapons Station (position 32-55.4N, 079-56.0W) on the Cooper River. All coordinates referenced use datum: NAD 1983.

(2165) (2) All waters within 100 yards of the vessel described in paragraph (a)(1) of this section while the vessel is conducting cargo operations at the Charleston Naval Weapons Station.

(2166) (b) Captain of the Port Charleston will announce the activation of the safety/security zones described in paragraph (a) of this section by Broadcast Notice to Mariners. The general regulations governing safety and security zones contained in §§165.23 and 165.33 apply.

**§165.709 Security Zone; Charleston Harbor, Cooper River, South Carolina.**

(2167) (a) Regulated area. The Coast Guard is establishing a fixed security zone on all waters of the Cooper River, bank-to-bank and surface to bottom, from the Don Holt I-526 Bridge to the intersection of Foster Creek at a line on 32 degrees 58 minutes North Latitude.

(2168) (b) Enforcement period. This section will be enforced when security assets are on scene and Marine Safety Office Charleston has notified the maritime community that an Enforcement Period is in effect. Marine Safety Office Charleston will notify the maritime community by broadcast notice to mariners on VHF Marine Band Radio, Channel 16 (156.8 MHz), or Marine Safety Information Bulletins, or actual notice from on scene security assets enforcing the security zone.

(2169) (c) Regulations. During enforcement of the security zone described in paragraph (a) of this section, vessels or persons are prohibited from entering, transiting, mooring, anchoring, or loitering within the security zone unless authorized by the Captain of the Port Charleston, South Carolina or his or her designated representative.

(2170) (1) Persons desiring to transit the Regulated Area may contact the Captain of the Port via VHF-FM channel 16 or by telephone at 843-720-3240 and request permission to transit the security zone.

(2171) (2) If permission to transit the security zone is granted, all persons and vessels must comply with the instructions of the Captain of the Port or his or her designated representative.

**§165.714 Regulated Navigation Area: Atlantic Ocean, Charleston, SC.**

(2172) (a) Location. The following area is a Regulated Navigation Area: A trapezoid at the water surface, and the entire water column from surface to seabed inclusive of the vessel, bounded by the following four coordinates:

| | |
|---|---|
| Western boundary | 32°42'56"N., 79°47'34"W |
| Southern boundary | 32°42'32"N., 79°46'42"W |
| Eastern boundary | 32°43'26"N., 79°45'27"W |
| Northern boundary | 32°43'56"N., 79°46'08"W |

(2173) (NAD 83)

(2174) (b) Regulations. In accordance with the general regulations in §165.23 of this part, all vessels and persons are prohibited from anchoring, diving, laying cable or conducting salvage operations in this zone except as authorized by the Captain of the Port.

**§165.720 Safety/Security Zone: St. Johns River, Jacksonville, FL.**

(2175) (a) Location. The water and the land within the following boundaries are established as a safety and security zone during specified conditions:

(2176) (1) All waters within 200 yards of Blount Island, Jacksonville, Florida and all adjacent land within 100 yards of the island shoreline during staging of Department of Defense equipment and during the loading/unloading of military supply vessels.

(2177) (2) All waters within 200 yards of "any" waterfront facility at which a laden military vessel is located and all land at the facility, including docks and piers, within 100 yards of the St. Johns River.

(2178) (3) All waters within 200 yards of any specified military supply vessel during its transit of the St. Johns River and out to three (3) nautical miles offshore.

(2179) (b) Regulations. (1) For public notice, the zone described in paragraph (a)(1) of this section is effective beginning 11 December 1990 and will remain in force until cancelled by the Captain of the Port Jacksonville, Florida.

(2180) (2) The COTP Jacksonville may activate, as necessary, any portion of the safety/security zone described in paragraphs (a)(2) and (a)(3) of this section by means of locally promulgated broadcast notice to mariners. Once implemented, neither overtaking nor meeting situations will be allowed during specified vessel transits.

(2181) (3) In accordance with the general regulations governing safety and security zones contained in 33 CFR 165.23 and 165.33 of this part, entry into any portion of the described zone is prohibited unless authorized by the Captain of the Port Jacksonville, Florida.

(2182) (4) This regulation does not apply to authorized law enforcement agencies operating within the safety/security zone.

**§165.722 Security Zone: St. Johns River, Jacksonville, Florida.**

(2183) (a) Location. The water located within the following area is established as a security zone: beginning at the shoreline of the St. Johns River at the northernmost property line of Naval Air Station Jacksonville next to Timuquana Country Club, at

(2184) 30°14'39.5"N., 81°40'45"W.; thence northeasterly to

(2185) 30°14'42"N., 81°40'42"W.; thence south remaining 400 feet from the shoreline at mean high water; thence past Piney Point and Black Point to the northern edge of Mulberry Cover Manatee refuge, 400 feet from Naval Air Station Jacksonville boat ramp, at

(2186) 30°13'00"N., 81°40'23.5"W.; thence southwesterly in a straight line to position

(2187) 30°12'14"N., 81°40'42"W.; thence southerly, remaining 400' seaward of the mean high water shoreline to

(2188) 30°11'40"N., 81°41'15.5"W.; thence northwest to the point at the end of the property line of Naval Air Station Jacksonville just north of the Buckman Bridge at position

(2189) 30°11'42.30"N., 81°41'23.66"W.; thence northeasterly along the mean high water shoreline of the St. Johns River and Mulberry Cove to the point of beginning. Datum: NAD 83

(2190) (b) In accordance with the general regulations in §165.33 of this part, no person or vessel may enter or remain in the zone without the permission of the Captain of the Port Jacksonville, Florida. All other portions of §165.33 remain applicable.

(2191) (c) This regulation does not apply to Coast Guard vessels and authorized law enforcement vessels operating within the Security Zone.

**§165.726 Regulated Navigation Areas; Miami River, Miami, Florida.**

(2192) (a) Location. The following are Regulated Navigation Areas:

(2193) (1) All the waters of the Miami River, Miami, Florida, from the Brickell Avenue Bridge, in approximate position 25°46.19'N., 80°11.4'W., inland to the South Florida Water Management District's salinity dam in approximate position 25°48.4'N., 80°15.6'W.

(2194) (2) The Tamiami Canal from its intersection with the Miami River in approximate position 25°47.7'N., 80°14.7'W. to the N.W. 37th Avenue bridge in approximate position 25°48.5'N., 80°15.5'W. All coordinates referenced use datum: NAD 83.

(2195) (b) Regulations. The restrictions in this paragraph apply to vessels operating within the regulated navigation areas in paragraph (a) of this section unless authorized to deviate by the Captain of the Port, Miami, Florida, or a Coast Guard commissioned, warrant, or petty officer designated by him.

(2196) (1) All rafted vessels (inboard and outboard) must be properly moored in accordance with applicable municipal laws and regulations.

(2197) (2) At no time shall any vessels be rafted more than two abreast.

(2198) (3) Neither single nor rafted vessels shall extend greater than 54 feet into the main river (measured from the dock) without permission of the Captain of the Port.

(2199) (4) A minimum channel width of 65 feet shall be maintained at all times on the Miami River from the Brickell Avenue Bridge west to the Tamiami Canal. A minimum channel width of 45 feet shall be maintained at all times on the Miami River west of the junction of the Miami River and the Tamiami Canal to the South Florida Water Management District's salinity dam, as well as on the Tamiami Canal from its mouth to the N.W. 37th Avenue Bridge.

(2200) (5) All moored and rafted vessels shall provide safe access from the shore.

(2201) (6) All moored and rafted vessels shall provide clear and ready access for land-based firefighters to safely and quickly reach outboard rafted vessels.

(2202) (7) No vessels shall moor or raft in any manner as to impede safe passage of another vessel to any of the tributaries of the Miami River.

(2203) (8) Nothing in these regulations shall prohibit the U.S. Army Corps of Engineers from requiring the relocation or movement of vessels in a declared flood emergency.

(2204) (c) Enforcement. Violations of these regulated navigation areas should be reported to the Captain of the Port, Miami. Persons in violation of these regulations will be subject to civil penalty under §165.13(b) of this part.

**§165.728 Jacksonville, Florida–Safety Zones.**

(2205) (a) The water, land, and land and water within the following boundaries are established as Safety Zones during the specified conditions:

(2206) (1) Zone A: 200 yards in all directions around any specified Maritime Prepositioned Ship as it transits between the St. Johns River entrance sea buoy (STJ) and its berth inside the Mayport Basin (Ribault Bay), Mayport, Florida. The prescribed safety zone will also be in effect as the vessel transits to its berth at Blount Island Marine Terminal, Jacksonville, Florida.

(2207) (2) Zone B: 100 yards in all directions on land and 200 yards on water from the eastern end of Transit Shed #2 to the east shore of Alligator Creek at Blount Island Terminal, Jacksonville, Florida.

(2208) (3) Zone C: 100 yards in all directions on land from Gate berth #1 and all waters within the Back River (locally known as the Gate Slip) on Blount Island, Jacksonville, Florida, commencing from a line drawn between the southwesterly most shore point 30°23'34"N., 81°30'52"W. and the southeasterly most shore point 30°23'38"N., 81°30'36"W.

(2209) (b) The areas described in paragraph (a) of this section may be closed to all vessels and persons, except those vessels and persons authorized by the Commander, Seventh Coast Guard District or the Captain of the Port, Jacksonville, Florida, whenever specified Maritime Prepositioned Ships are transiting the St. Johns River (Zone A), moored at Blount Island (Zone B), or moored at Gate Terminal (Zone C).

(2210) (c) The general regulations governing safety zones contained in 33 CFR 165.23 apply.

(2211) (d) The Captain of the Port Jacksonville, Florida will activate the safety zones or specific portions of them by issuing a local broadcast notice to mariners. The closing of the area at Blount Island, described above, will be signified by the display of a rotating yellow light located on the waterfront at Blount Island Marine Terminal or at the Gate Terminal Berth #1.

**§165.729 Jacksonville Harbor, Florida-Security Zone.**

(2212) (a) The water, land, and land and water within the following boundaries are established as Security Zones during the specified conditions:

(2213) (1) Zone A: 200 yards in all directions around any specified Maritime Prepositioned Ship as it transits between the St. Johns River entrance sea buoy (STJ) and its berth inside the Mayport Naval Basin (Ribault Bay), Mayport, Florida. The prescribed security zone will also be in effect as the vessel transits to its berth at Blount Island Marine Terminal, Jacksonville, Florida.

(2214) (2) Zone B: 100 yards in all directions on land and 200 yards on water from the eastern end of Transit Shed #2 to the east shore of Alligator Creek at Blount Island Terminal, Jacksonville, Florida.

(2215) (3) Zone C: 100 yards in all directions on land from Gate berth #1 and all waters within the Back River (locally known as the Gate Slip) on Blount Island, Jacksonville, Florida, commencing from a line drawn between the southwesterly most shore point 30°23'34"N., 81°30'52"W. and the southeasterly most shore point 30°23'38"N., 81°30'36"W.

(2216) (b) The areas described in paragraph (a) of this section may be closed to all vessels and persons, except those vessels and persons authorized by the Commander, Seventh Coast Guard District or the Captain of the Port, Jacksonville, Florida, whenever specified Maritime Prepositioned Ships are transiting the St. Johns River (Zone A), moored at Blount Island (Zone B), or moored at Gate Terminal (Zone C).

(2217) (c) The general regulations governing safety zones contained in 33 CFR 165.23 apply.

(2218) (d) The Captain of the Port Jacksonville, Florida will activate the safety zones or specific portions of them by issuing a local broadcast notice to mariners. The closing of the area at Blount Island, described above, will be signified by the display of a rotating yellow light located on the waterfront at Blount Island Marine Terminal or at the Gate Terminal Berth #1.

**§165.730 Kings Bay, GA-Regulated navigation area.**

(2219) Vessels transiting in the water bounded by the line connecting the following points must travel no faster than needed for steerageway:

(2220) 30°48'00.0"N., 081°29'24.0"W.

(2221) 30°46'19.5"N., 081°29'17.0"W.

(2222) 30°47'35.0"N., 081°30'16.5"W. and thence to the point of beginning.

**§165.731 Safety/Security Zone; Cumberland Sound, Georgia and St. Marys River Entrance Channel.**

(2223) (a) Location. A permanent safety/security zone is established within the following coordinates, the area enclosed by a line starting at

(2224) 30°44'55"N., 81°29'39"W.; thence to

(2225) 30°44'55"N., 81°29'18"W.; thence to

(2226) 30°46'35"N., 81°29'18"W.; thence to

(2227) 30°47'02"N., 81°29'34"W.; thence to

(2228) 30°47'21"N., 81°29'39"W.; thence to

(2229) 30°48'00"N., 81°29'42"W.; thence to

(2230) 30°49'07"N., 81°29'56"W.; thence to

(2231) 30°49'55"N., 81°30'35"W.; thence to

(2232) 30°50'15"N., 81°31'08"W.; thence to

(2233) 30°50'14"N., 81°31'30"W.; thence to

(2234) 30°49'58"N., 81°31'45"W.; thence to

(2235) 30°49'58"N., 81°32'03"W.; thence to

(2236) 30°50'12"N., 81°32'17"W.; thence following the land based perimeter boundary to the point of origin.

(2237) (b) A temporary safety/security zone, when activated by the Captain of the Port, Jacksonville, Florida, encompasses all waters and land from bank to bank within Cumberland Sound and the St. Marys Entrance Channel: the northern extent of this zone starts at the southern tip of Crab Island; lighted buoy number "1" at the mouth of the Amelia River demarks the southern boundary; daymarker number "2" at the mouth of the St. Marys River indicates the western boundary; and the eastern boundary extends out to three (3) nautical miles in the Atlantic Ocean, with the zone also encompassing the waters within 1,000 yards of the entrance channel east of the jetties.

(2238) (c) Regulations. (1) The Captain of the Port, Jacksonville, Florida will activate the temporary safety/security zone described in paragraph (b) of this section by issuing a local broadcast notice to mariners.

(2239) (2) All persons and vessels in the vicinity of the safety/security zone shall immediately obey any direction or order of the Captain of the Port, Jacksonville, Florida.

(2240) (3) The general regulations governing safety and security zones contained in 33 CFR 165.23 and .33 apply. No person or vessel may enter or remain within the designed zones without the permission of the Captain of the Port, Jacksonville, Florida.

(2241) (4) This regulation does not apply to persons or vessels operating under the authority of the United States Navy nor to authorized law enforcement agencies.

**§165.749 Security Zone: Escorted Vessels, Savannah, Georgia, Captain of the Port Zone.**

(2242) (a) Definitions. The following definitions apply to this section:

(2243) COTP means Captain of the Port Savannah, GA.

(2244) Designated representatives means Coast Guard Patrol Commanders including Coast Guard coxswains, petty officers and other officers operating Coast Guard vessels, and Federal, State, and local officers designated by or assisting the COTP, in the enforcement of the security zone.

(2245) Escorted vessel means a vessel, other than a large U.S. naval as defined in 33 CFR 165.2015, that is accompanied by one or more Coast Guard assets or other Federal, State, or local law enforcement agency assets clearly identifiable by lights, vessels markings, or with agency insignia as listed below:

(2246) (1) Coast Guard surface or air asset displaying the Coast Guard insignia.

(2247) (2) State and/or local law enforcement asset displaying the applicable agency markings and/or equipment associated with the agency.

(2248) (3) When escorted vessels are moored, dayboards or other visual indications such as lights or buoys may be used. In all cases, broadcast notice to mariners will be issued to advise mariners of these restrictions.

(2249) Minimum safe speed means the speed at which a vessel proceeds when it is fully off plane, completely settled in the water and not creating excessive wake. Due to the different speeds at which vessels of different sizes and configurations may travel while in compliance with this definition, no specific speed is assigned to minimum safe speed. In no instance should minimum safe speed be interpreted as a speed less than that required for a particular vessel to maintain steerageway. A vessel is not proceeding at minimum safe speed if it is:

(2250) (1) On a plane;

(2251) (2) In the process of coming up onto or coming off a plane; or

(2252) (3) Creating an excessive wake.

(2253) (4) Regulated Area. All navigable waters, as defined in 33 CFR 2.36, within the Captain of the Port Zone, Savannah, Georgia 33 CFR 3.35-15.

(2254) (c) Security Zone. A 300-yard security zone is established around each escorted vessel within the regulated area described in paragraph (b) of this section. This is a moving security zone when the escorted vessel is in transit and becomes a fixed zone when the escorted vessel anchored or moored. A security zone will not extend beyond the boundary of the regulated area in this section.

(2255) (d) Regulations. (1) The general regulations for security zones contained in §165.33 of this part apply to this section.

(2256) (2) A vessel may request the permission of the COTP Savannah or a designated representative to enter the security zone described in paragraph (c) of this section. If permitted to enter the security zone, a vessel must proceed at the minimum safe speed and must comply with the orders of the COTP or a designated representative. No vessel or person may enter the inner 50-yard portion of the security zone closed to the vessel.

(2257) (e) Notice of Security Zone. The COTP will inform the public of the existence or status of the security zone around escorted vessels in the regulated area by Broadcast Notice to Mariners. Coast Guard assets or other Federal, State or local law enforcement agency assets will be clearly identified by lights, vessels markings, or with agency insignia. When escorted vessels are moored, dayboards or other visual indications such as lights or buoys may be used.

(2258) (f) Contact Information. The COTP Savannah may be reached via phone at 912-652-4353. Any on scene Coast Guard or designated representative assets may be reached via VHF-FM channel 16.

**§165.751 Security Zone: LNG mooring slip, Savannah River, Savannah, Georgia.**

(2259) (a) Security Zone. The following area is a security zone: All the waters from surface to bottom of the northeastern most mooring dolphin located at approximately 32°05.01' North, 080°59.38' West, to the southeastern most mooring dolphin located at approximately 32°04.79' North, 080°59.35' West, and continues west along the North and South shoreline of the mooring slip to the shoreline of the right descending bank of the Savannah River. All marine traffic is prohibited from entering this zone unless authorized by the Captain of the Port (COTP).

(2260) (b) Applicability. This section applies to all vessels including naval and other public vessels, except vessels that are engaged in the following operations:

(2261) (1) Law enforcement, security, or search and rescue;

(2262) (2) Servicing aids to navigation;

(2263) (3) Surveying, maintenance, or improvement of waters in the security zone; or

(2264) (4) Actively engaged in escort, maneuvering, or support duties for an LNG tankship.

(2265) (c) Regulations. In accordance with the general regulations in §165.33 of this part, entry into or movement within this zone is prohibited unless authorized by the Captain of the Port Savannah or vessels engaged in activities defined in paragraph (b).

(2266) (d) Reporting of Violations. Violations of this section should be reported to the Captain of the Port, Savannah, at (912) 652-4353.

**§165.756 Regulated Navigation Area; Savannah River, Georgia.**

(2267) (a) Regulated Navigation Area (RNA). The Savannah River between Fort Jackson (32°04.93'N., 081°02.19'W.) and the Savannah River Channel Entrance Sea Buoy is a regulated navigation area when an LNG tankship in excess of heel is transiting the area or moored at the LNG facility. All coordinates are North American Datum 1983.

(2268) (b) Definitions. The following definitions apply to this section:

(2269) Bare steerage way means the minimum speed necessary for a ship to maintain control over its heading.

(2270) Bollard pull means an industry standard used for rating tug capabilities and is the pulling force imparted by the tug to the towline. It means the power that an escort tug can apply to its working line(s) when operating in a direct mode.

(2271) Direct mode means a towing technique defined as a method of operation by which a towing vessel generates towline forces by thrust alone at an angle equal to or nearly equal to the towline, or thrust forces applied directly to the escorted vessel's hull.

(2272) Fire Wire means a length of wire rope or chain hung from the bow and stern of a vessel in port to allow the vessel to be towed away from the pier in case of fire; also called fire warp or emergency towing wire.

(2273) Heel means the minimum quantity of liquefied natural gas (LNG) retained in an LNG tankship after unloading at the LNG facility to maintain temperature, pressure, and/or prudent operations. A quantity of LNG less than five percent (5%) of the LNG tankship's carrying capacity shall be presumed to be heel.

(2274) Indirect mode means a towing technique defined as a method of operation by which an escorting towing vessel generates towline forces by a combination of thrust and hydrodynamic forces resulting from a presentation of the underwater body of the towing vessel at an oblique angle to the towline. This method increases the resultant bollard pull, thereby arresting and controlling the motion of an escorted vessel.

(2275) LNG tankship means a vessel as described in 46 CFR 154.

(2276) Made-up means physically attached by cable, towline, or other secure means in such a way as to be immediately ready to exert force on a vessel being escorted.

(2277) Make-up means the act of, or preparations for becoming made-up.

(2278) Operator means the person who owns, operates, or is responsible for the operation of a facility or vessel.

(2279) Savannah River Channel Entrance Sea Buoy means the aid to navigation labeled R W "T" Mo (A) WHIS on the National Oceanic and Atmospheric Administration's (NOAA) Nautical Chart 11512.

(2280) Standby means readily available at the facility and equipped to provide a ready means of assistance to maintain a safe zone around LNG tankships, provide emergency firefighting assistance, and aid the LNG tankship in the event of an emergency departure.

(2281) Underway means that a vessel is not at anchor, not made fast to the shore, or not aground.

(2282) (c) Applicability. This section applies to all vessels operating within the RNA, including naval and other public vessels, except vessels that are engaged in the following operations:

(2283) (1) Law enforcement, security, or search and rescue;

(2284) (2) Servicing aids to navigation;

(2285) (3) Surveying, maintenance, or improvement of waters in the RNA; or

(2286) (4) Actively engaged in escort, maneuvering, or support duties for an LNG tankship.

(2287) (d) Regulations–(1) Requirements for vessel operations while a LNG tankship, carrying LNG in excess of heel, is underway within the RNA. (i) Except for a vessel that is moored at a marina, wharf, or pier, and remains moored, no vessel 1,600 gross tons or greater may come within two nautical miles of a LNG tankship, carrying LNG in excess of heel, which is underway within the Savannah River shipping channel without the permission of the Captain of the Port (COTP).

(2288) (ii) All vessels less than 1,600 gross tons shall keep clear of transiting LNG tankships.

(2289) (iii) The owner, master, or operator of a vessel carrying liquefied natural gas (LNG) shall:

(2290) (A) Comply with the notice requirements of 33 CFR part 160. The COTP may delay the vessel's entry into the RNA to accommodate other commercial traffic.

(2291) (B) Obtain permission from the COTP before commencing the transit into the RNA.

(2292) (C) Not enter or get underway within the RNA if visibility during the transit is not sufficient to safely navigate the channel, and/or wind speed is, or is expected to be, greater than 25 knots.

(2293) (D) While transiting the RNA, the LNG tankship, carrying LNG in excess of heel, shall have a minimum of two escort towing vessels with a minimum of 100,000 pounds of bollard pull, 4,000 horsepower and capable of safely operating in the indirect mode. At least one of the towing vessels shall be FiFi Class 1 equipped.

(2294) (2) Requirements while an LNG tankship is moored outside of the LNG facility slip. (i) An LNG tankship moored outside of the LNG facility slip shall have on-scene a minimum of two escort towing vessels each with a minimum of 100,000 pounds of bollard pull, 4,000 horsepower and capable of safely operating in the indirect mode in order to escort transiting vessels 1,600 gross tons or greater past the moored LNG tankship. At least one of these towing vessels shall be FiFi Class 1 equipped.

(2295) (ii) In addition to the two towing vessels required by paragraph (d)(2)(i) of this section, the LNG tankship

moored outside of the slip shall have at least one standby towing vessel with a minimum of 90,000 pounds of bollard pull to take appropriate actions in an emergency as directed by the LNG vessel bridge watch required in paragraph (d)(5) of this section.

(2296) (3) Requirements while LNG tankships are moored inside the LNG facility slip. (i) An LNG tankship moored inside the LNG facility slip shall have two standby towing vessels with a minimum capacity of 100,000 pounds of bollard pull, 4,000 horsepower, and the ability to operate safely in the indirect mode. At least one of these towing vessels shall be FiFi Class 1 equipped. The standby towing vessels shall take appropriate action in an emergency as directed by the LNG vessel bridge watch required in paragraph (d)(5) of this section.

(2297) (ii) If two LNG tankships are moored inside the LNG facility slip, each vessel shall provide a standby towing vessel that is FiFi class 1 equipped with a minimum capacity of 100,000 pounds of bollard pull and 4,000 horsepower that is available to assist as directed by the LNG vessel bridge watch required in paragraph (d)(5) of this section.

(2298) (4) Requirements while LNG tankships are moored both inside the LNG facility slip and outside the LNG facility slip. (i) When one LNG tankship is moored inside and one LNG tankship is moored outside of the LNG facility slip, the LNG tankship moored outside of the LNG facility slip shall have on-scene a minimum of two escort towing vessels each with a minimum of 100,000 pounds of bollard pull, 4,000 horsepower and capable of safely operating in the indirect mode in order to escort transiting vessels 1,600 gross tons or greater past the moored LNG tankship. At least one of these towing vessels shall be FiFi Class 1 equipped. In addition, the LNG tankship moored inside of the slip shall have at least one standby towing vessel with a minimum of 100,000 pounds of bollard pull, 4,000 horsepower and FiFi Class 1 equipped to take appropriate actions in an emergency as directed by the LNG vessel bridge watch required in paragraph (d)(5) of this section.

(2299) (ii) When one LNG tankship is moored outside and two LNG tankships are moored inside the LNG facility slip, the LNG tankship moored outside of the LNG facility slip shall have on-scene a minimum of two escort towing vessels each with a minimum of 100,000 pounds of bollard pull, 4,000 horsepower and capable of safely operating in the indirect mode in order to escort transiting vessels 1,600 gross tons or greater past the moored LNG tankship. At least one of these towing vessels shall be FiFi Class 1 equipped. In addition, the LNG tankships moored inside of the slip shall have at least one standby towing vessel between the two ships with a minimum of 100,000 pounds of bollard pull, 4,000 horsepower and FiFi Class 1 equipped to take appropriate actions in an emergency as directed by the LNG vessel bridge watch required in paragraph (d)(5) of this section.

(2300) (iii) In the event of an actual emergency, escort towing vessels can be utilized as stand-by towing vessels to take appropriate actions as directed by the LNG vessel bridge watch required in paragraph (d)(5) of this section.

(2301) (5) Requirements for moored LNG tankships. (i) While moored within the RNA, each LNG tankship shall maintain a bridge watch consisting of a docking pilot or licensed deck officer who shall monitor all vessels transiting past the LNG facility. In addition, the LNG Bridge Watch shall communicate with the pilots of vessels greater than 1600 gross tons at the points identified in section (d)(6)(iii) of this section prior to passing the LNG facility in order to take actions of the towing vessel(s) required in paragraphs (d)(2) through (4) of this section.

(2302) (ii) While moored within the RNA, LNG tankships shall have emergency towing wires (fire wires) positioned one meter above the waterline, both on the offshore bow and quarter of the ship. LNG vessels equipped with waterline bollards are exempt from this requirement.

(2303) (6) Requirements for other vessels while within the RNA. (i) Transiting vessels 1,600 gross tons or greater, when passing an LNG tankship moored outside of the LNG facility slip, shall have a minimum of two towing vessels with a minimum capacity of 100,000 pounds of bollard pull, 4,000 horsepower, and the ability to operate safely in the indirect mode, made-up in such a way as to be immediately available to arrest and control the motion of an escorted vessel in the event of steering, propulsion or other casualty. At least one of the towing vessels shall be FiFi Class 1 equipped. While it is anticipated that vessels will utilize the towing vessel services required in paragraphs (d)(2)(i) and (d)(4)(i) of this section, this section does not preclude escorted vessel operators from providing their own towing vessel escorts, provided they meet the requirements of this part.

(2304) (A) Outbound vessels shall be made-up and escorted from Bight Channel Light 46 until the vessel is safely past the LNG dock.

(2305) (B) Inbound vessels shall be made-up and escorted from Elba Island Light 37 until the vessel is safely past the LNG dock.

(2306) (ii) The requirements in paragraph (d)(6)(i) of this section do not apply when one or more LNG tankships are moored in the LNG facility slip and no LNG tankship is moored at the pier outside of the LNG facility slip.

(2307) (iii) Vessels 1,600 gross tons or greater shall make a broadcast on channel 13 at the following points on the Savannah River:

(2308) (A) Buoy “33” in the vicinity of Fields Cut for inbound vessels;

(2309) (B) Buoy “53” in the vicinity of Fort Jackson for outbound vessels.

(2310) (iv) Vessels 1,600 gross tons or greater shall at a minimum, transit at bare steerageway when within an area 1,000 yards on either side of the LNG facility slip

to minimize potential wake or surge damage to the LNG facility and vessel(s) within the slip.

(2311) (v) Vessels 1,600 gross tons or greater shall not meet nor overtake within an area 1,000 yards on either side of the LNG facility slip when an LNG tankship is present within the slip.

(2312) (vi) All vessels less than 1,600 gross tons shall not approach within 70 yards of an LNG tankship, carrying LNG in excess of heel, without the permission of the Captain of the Port.

(2313) (vii) Except for vessels involved in those operations noted in paragraph (c) of this section entitled Applicability, no vessel shall enter the LNG facility slip at any time without the permission of the Captain of the Port.

(2314) (e) Waivers. (1) The COTP may waive any requirement in this section, if the COTP finds that it is in the best interest of safety or in the interest of national security. Such waivers may be verbal or in writing.

(2315) (2) An application for a waiver of these requirements must state the compelling need for the waiver and describe the proposed operation and methods by which adequate levels of safety are to be obtained.

(2316) (f) Enforcement. Violations of this section should be reported to the Captain of the Port, Savannah, at (912) 652–4353. In accordance with the general regulations in §165.13 of this part, no person may cause or authorize the operation of a vessel in the regulated navigation area contrary to the provisions of this section.

### §165.759 Security Zones; Ports of Jacksonville, Fernandina, and Canaveral, Florida.

(2317) (a) Regulated area. Moving security zones are established 100 yards around all tank vessels, cruise ships, and military pre-positioned ships during transits entering or departing the ports of Jacksonville, Fernandina, and Canaveral, Florida. These moving security zones are activated when the subject vessels pass the St. Johns River Sea Buoy, at approximate position 30°23'35"N., 81°19'08"W., when entering the port of Jacksonville, or pass Port Canaveral Channel Entrance Buoys #3 or #4, at respective approximate positions 28°22.7'N., 80°31.8'W., and 28°23.7'N., 80°29.2'W., when entering Port Canaveral. Fixed security zones are established 100 yards around all tank vessels, cruise ships, and military pre-positioned ships docked in the Ports of Jacksonville, Fernandina, and Canaveral, Florida.

(2318) (b) Regulations. In accordance with the general regulations §165.33 of this part, entry into these zones is prohibited except as authorized by the Captain of the Port, or a Coast Guard commissioned, warrant, or petty officer designated by him. The Captain of the Port will notify the public of any changes in the status of this zone by Marine Safety Radio Broadcast on VHF Marine Band Radio, Channel 22 (157.1 MHz).

(2319) (c) Definition. As used in this section: cruise ship means a passenger vessel, except for a ferry, greater than 100 feet in length that is authorized to carry more than 12 passengers for hire.

(2320) (d) Authority. In addition to 33 U.S.C. 1231 and 50 U.S.C. 191, the authority for this section includes 33 U.S.C. 1226.

### §165.761 Security Zones; Port of Palm Beach, Port Everglades, Port of Miami, and Port of Key West, Florida.

(2321) (a) Location. The following areas are security zones:

(2322) (1) Fixed and moving security zones around vessels in the Ports of Palm Beach, Port Everglades, Miami, and Key West, Florida. Moving security zones are established 100 yards around all passenger vessels, vessels carrying cargoes of particular hazard, or vessels carrying liquefied hazardous gas (LHG) as defined in 33 CFR parts 120, 126 and 127 respectively, during transits entering or departing the Ports of Palm Beach, Port Everglades, Miami or Key West, Florida. These moving security zones are activated when the subject vessel passes: "LW" buoy, at approximate position 26°46.3'N., 080°00.6'W., when entering the Port of Palm Beach, passes "PE" buoy, at approximate position 26°05.5'N., 080°04.8'W., when entering Port Everglades; the "M" buoy, at approximate position 25°46.1'N., 80°05.0'W., when entering the Port of Miami; and "KW" buoy, at approximate position 24°27.7'N., 081°48.1'W., when entering the Port of Key West. Fixed security zones are established 100 yards around all passenger vessels, vessels carrying cargoes of particular hazard or liquefied hazardous gas (LHG) as defined in 33 CFR parts 120, 126 and 127 respectively, while they are docked in the Ports of Palm Beach, Port Everglades, Miami or Key West, Florida.

(2323) (2) Fixed security zone in the Port of Miami, Florida. A fixed security zone encompasses all waters between Watson Park and Star Island on the MacArthur Causeway south to the Port of Miami. The western boundary is formed by an imaginary line from points 25°46.79'N., 080°10.90'W., to 25°46.77'N., 080°10.92'W to 25°46.88'N., 080°10.84'W., and ending on Watson Park at 25°47.00'N., 080°10.67'W. The eastern boundary is formed by an imaginary line from the traffic light located at Bridge road, in approximate position 25°46.33'N., 080°09.12'W., which leads to Star Island, and MacArthur Causeway directly extending across the Main Channel to the Port of Miami, at 25°46.26'N., 080°09.18'W. The fixed security zone is activated when two or more passenger vessels, vessels carrying cargoes of particular hazard, or vessels carrying liquefied hazardous gas (LHG) as defined in 33 CFR 120, 126 and 127 respectively, enter or moor within this zone.

(2324) (i) Vessels may be allowed to transit the Main Channel when only one passenger vessel or vessel carrying cargoes of particular hazard are berthed, by staying on the north side of the law enforcement boats and cruise ship tenders, which will mark a transit lane in channel.

(2325) (ii) When passenger vessels are not berthed on the Main Channel, navigation will be unrestricted. Law enforcement vessels can be contacted on VHF Marine Band Radio, Channel 16 (156.8 MHz).

(2326) (3) Fixed security zones in the Port Everglades. A fixed security zone encompasses all waters west of an imaginary line starting at the northern most point 26°05.98'N., 080°07.15'W., near the west side of the 17th Street Causeway Bridge, to the southern most point 26°05.41'N., 080°06.96'W., on the northern tip of pier 22. An additional fixed security zone encompasses the Intracoastal Waterway between a line connecting point 26°05.41'N., 080°06.97'W., on the northern tip of berth 22 and a point directly east across the Intracoastal Waterway to 26°05.41'N., 080°06.74'W.; and a line drawn from the corner of Port Everglades berth 29 at point 26°04.72'N., 080°06.92'W. easterly across the Intracoastal Waterway to John U. Lloyd Beach, State Recreational Area at point 26°04.72'N., 080°06.81'W.

(2327) (i) Vessels may be allowed to transit the Intracoastal Waterway when passenger vessels or vessels carrying cargoes of particular hazard are berthed, by staying east of the law enforcement vessels and cruise ship tenders, which will mark a transit lane in the Intracoastal Waterway.

(2328) (ii) Periodically, vessels may be required to temporarily hold their positions while large commercial traffic operates in this area. Vessels in this security zone must follow the orders of the COTP or his designated representative, who may be embarked in law enforcement or other vessels on scene. When passenger vessels are not berthed on the Intracoastal Waterway, navigation will be unrestricted. Law enforcement vessels can be contacted on VHF Marine Band Radio, Channel 16 (156.8 MHz).

(2329) (b) Regulations. (1) Prior to commencing the movement, the person directing the movement of a passenger vessel, a vessel carrying cargoes of particular hazard or a vessel carrying liquefied hazardous gas (LHG) as as defined in Title 33, Code of Federal Regulations parts 120, 126 and 127 respectively, is encouraged to make a security broadcast on VHF Marine Band Radio, Channel 13 (156.65 MHz) to advise mariners of the moving security zone activation and intended transit.

(2330) (2) In accordance with the general regulations §165.33 of this part, entry into those zones is prohibited except as authorized by the Captain of the Port Miami or his designated representative. Other vessels such as pilot boats, cruise ship tenders, tug boats and contracted security vessels may assist the Coast Guard Captain of the Port under the direction of his designated representative by monitoring these zones strictly to advise mariners of the restrictions. The Captain of the Port will notify the public via Marine Safety Radio Broadcast on VHF Marine Band Radio, Channel 16 (156.8 MHz) when the security zones are being enforced.

(2331) (3) Persons desiring to enter or transit the area of the security zone may contact the Captain of the Port at (305) 535-8701 or on VHF Marine Band Radio, Channel 16 (156.8 MHz) to seek permission to transit the area. If permission is granted, all persons and vessels must comply with the instructions of the Captain of the Port or his or her designated representative.

(2332) (4) The Captain of the Port Miami may waive any of the requirements of this subpart for any vessel upon finding that the vessel or class of vessel, operational conditions, or other circumstances are such that application of this subpart is unnecessary or impractical for the purpose of port security, safety or environmental safety.

(2333) (c) Definition. As used in this section, cruise ship means a passenger vessel greater than 100 feet in length and over 100 gross tons that is authorized to carry more than 12 passengers for hire making voyages lasting more than 24 hours, except for a ferry.

(2334) (d) Authority. In addition to 33 U.S.C. 1231 and 50 U.S.C. 191, the authority for this section includes 33 U.S.C. 1226.

### §165.765 Regulated Navigation Area; Port Everglades Harbor, Fort Lauderdale, Florida.

(2335) (a) Location. The following area in Port Everglades harbor is a regulated navigation area; all waters of Port Everglades harbor, from shore to shore, encompassed by a line commencing at the south mid-point tip of Harbor Heights approximately 26°05.67'N., 080°06.684'W.; thence south across Bar Cut to a point north of the Nova University Marina approximately 26°05.552'N., 80°06.682'W., thence southwesterly to a point near the center of Lake Mabel approximately 26°05.482'N., 080°06.793'W., thence northwesterly to a point near the Quick Flashing Red #12 approximately 26°05.666'N., 080°06.947'W., thence east to south mid-point tip of Harbor Heights (starting point) approximately 26°05.687'N., 080°06.684'W.

(2336) (b) Regulations. Vessels less than 150 meters entering and transiting through the regulated navigation area shall proceed at a slow speed. Nothing in this section alleviates vessels or operators from complying with all state and local laws in the area including manatee slow speed zones. Nor should anything in this section be construed as conflicting with the requirement to operate at safe speed under the Inland Navigation Rules, 33 U.S.C. 2001 et seq.

(2337) (c) Definition. As used in this section, slow speed means the speed at which a vessel proceeds when it is fully off plane, completely settled in the water and not creating excessive wake. Due to the different speeds at which vessels of different sizes and configurations may travel while in compliance with this definition, no specific speed is assigned to slow speed. A vessel is not proceeding at slow speed if it is;

(2338) (1) On a plane;

(2339) (2) In the process of coming up on or coming off of plane; or

(2340) (3) Creating an excessive wake.

**§ 165.769 Security Zone; Escorted Vessels, Charleston, South Carolina, Captain of the Port**

(2341) (a) Definitions. The following definitions apply to this section:

(2342) COTP means Captain of the Port Charleston, SC.

(2343) Designated representative means Coast Guard Patrol Commanders including Coast Guard coxswains, petty officers and other officers operating Coast Guard vessels, and federal, state, and local officers designated by or assisting the COTP, in the enforcement of the security zone.

(2344) Escorted vessel means a vessel, other than a large U.S. naval vessel as defined in 33 CFR 165.2015, that is accompanied by one or more Coast Guard assets or other Federal, State or local law enforcement agency assets clearly identifiable by lights, vessel markings, or with agency insignia as listed below:

(2345) Coast Guard surface or air asset displaying the Coast Guard insignia.

(2346) State and/or local law enforcement asset displaying the applicable agency markings and/or equipment associated with the agency.

(2347) When escorted vessels are moored, dayboards or other visual indications such as lights or buoys may be used. In all cases, broadcast notice to mariners will be issued to advise mariners of these restrictions.

(2348) Minimum safe speed means the speed at which a vessel proceeds when it is fully off plane, completely settled in the water and not creating excessive wake. Due to the different speeds at which vessels of different sizes and configurations may travel while in compliance with this definition, no specific speed is assigned to minimum safe speed. In no instance should minimum safe speed be interpreted as a speed less than that required for a particular vessel to maintain steerageway. A vessel is not proceeding at minimum safe speed if it is:

(2349) (1) On a plane;

(2350) (2) In the process of coming up onto or coming off a plane; or

(2351) (3) Creating an excessive wake.

(2352) (b) Regulated area. All navigable waters, as defined in 33 CFR 2.36, within the Captain of the Port Zone, Charleston, South Carolina 33 CFR 3.35-15.

(2353) (c) Security zone. A 300-yard security zone is established around each escorted vessel within the regulated area described in paragraph (b) of this section. This is a moving security zone when the escorted vessel is in transit and becomes a fixed zone when the escorted vessel is anchored or moored. A security zone will not extend beyond the boundary of the regulated area of this section.

(2354) (d) Regulations. (1) The general regulations for security zones contained in § 165.33 of this part applies to this section.

(2355) (2) A vessel may request the permission of the COTP Charleston or a designated representative to enter the security zone described in paragraph (c) of this section. If permitted to enter the security zone, a vessel must proceed at the minimum safe speed and must comply with the orders of the COTP or a designated representative. No vessel or person may enter the inner 50-yard portion of the security zone closest to the vessel.

(2356) (e) Notice of security zone. The COTP will inform the public of the existence or status of the security zones around escorted vessels in the regulated area by Broadcast Notice to Mariners. Coast Guard assets or other Federal, State or local law enforcement agency assets will be clearly identified by lights, vessel markings, or with agency insignia. When escorted vessels are moored, dayboards or other visual indications such as lights or buoys may be used.

(2357) (f) Contact information. The COTP Charleston may be reached via phone at (843) 724-7616. Any on scene Coast Guard or designated representative assets may be reached via VHF-FM channel 16.

**§165.777 Security Zone; West Basin, Port Canaveral Harbor, Cape Canaveral, Florida.**

(2358) (a) Regulated area. The following area is a security zone: All waters of the West Basin of Port Canaveral Harbor northwest of an imaginary line between two points: 28°24'57.88"N., 80°37'25.69"W. to 28°24'37.48"N., 80°37'34.03"W.

(2359) (b) Requirement. (1) This security zone will be activated 4 hours prior to the scheduled arrival of a cruise ship at the West Basin of Port Canaveral Harbor during MARSEC Levels 2 and 3 or when the COTP determines there is a specified credible threat during MARSEC Level 1. This security zone will not be deactivated until the departure of all cruise ships from the West Basin. The zone is subject to enforcement when it is activated.

(2360) (2) Under general security zone regulations of 33 CFR 165.33, no vessel or person may enter or navigate within the regulated area unless specifically authorized by the COTP or the COTP's designated representative. Any person or vessel authorized to enter the security zone must operate in strict conformance with any direction given by the COTP or a designated representative and leave the security zone immediately if so ordered.

(2361) (3) The public will be notified when the security zone is activated by the display of a red ball on a 50-foot pole located at the east end of Cruise Ship terminal 10. This red ball will be lowered when the security zone is deactivated. To ensure boaters are given sufficient knowledge of the security zone, the Coast Guard will continuously broadcast the activations of the zone and law enforcement vessels will be on scene to inform boaters that the zone has been activated. Vessels encroaching on the security zone will be issued a Public Notice which clearly states the location of the security zone and the times it will be enforced. This will be the boater's first warning prior to enforcement action being taken.

(2362) (c) Definitions. The following definition applies to this section:

(2363) Designated representative means Coast Guard Patrol Commanders including Coast Guard coxswains, petty officers and other officers operating Coast Guard vessels, and federal, state, and local law enforcement officers designated by or assisting the COTP in the enforcement of the security zone.

(2364) (d) Captain of the Port Contact Information. If you have any questions about this regulation, please contact the Sector Command Center at (904) 564-7513.

(2365) (e) Enforcement periods. This section will only be subject to enforcement when the security zone described in paragraph (a) is activated as specified in paragraph (b) (1) of this section.

## Subpart G-Protection of Naval Vessels

### §165.2010 Purpose.

(2366) This subpart establishes the geographic parameters of naval vessel protection zones surrounding U.S. naval vessels in the navigable waters of the United States. This subpart also establishes when the U.S. Navy will take enforcement action in accordance with the statutory guideline of 14 U.S.C. 91. Nothing in the rules and regulations contained in this subpart shall relieve any vessel, including U.S. naval vessels, from the observance of the Navigation Rules. The rules and regulations contained in this subpart supplement, but do not replace or supercede, any other regulation pertaining to the safety or security of U.S. naval vessels.

### §165.2015 Definitions.

(2367) The following definitions apply to this subpart:

(2368) Atlantic Area means that area described in 33 CFR 3.04–1 Atlantic Area.

(2369) Large U.S. naval vessel means any U.S. naval vessel greater than 100 feet in length overall.

(2370) Naval defensive sea area means those areas described in 32 CFR part 761.

(2371) Naval vessel protection zone is a 500-yard regulated area of water surrounding large U.S. naval vessels that is necessary to provide for the safety or security of these U.S. naval vessels.

(2372) Navigable waters of the United States means those waters defined as such in 33 CFR part 2.

(2373) Navigation rules means the Navigation Rules, International-Inland.

(2374) Official patrol means those personnel designated and supervised by a senior naval officer present in command and tasked to monitor a naval vessel protection zone, permit entry into the zone, give legally enforceable orders to persons or vessels within the zone, and take other actions authorized by the U.S. Navy.

(2375) Pacific Area means that area described in 33 CFR 3.04–3 Pacific Area.

(2376) Restricted area means those areas established by the Army Corps of Engineers and set out in 33 CFR part 334.

(2377) Senior naval officer present in command is, unless otherwise designated by competent authority, the senior line officer of the U.S. Navy on active duty, eligible for command at sea, who is present and in command of any part of the Department of Navy in the area.

(2378) U.S. naval vessel means any vessel owned, operated, chartered, or leased by the U.S. Navy; any pre-commissioned vessel under construction for the U.S. Navy, once launched into the water; and any vessel under the operational control of the U.S. Navy or a Combatant Command.

(2379) Vessel means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, except U.S. Coast Guard or U.S. naval vessels.

### §165.2020 Enforcement authority.

(2380) (a) Coast Guard. Any Coast Guard commissioned, warrant or petty officer may enforce the rules and regulations contained in this subpart.

(2381) (b) Senior naval officer present in command. In the navigable waters of the United States, when immediate action is required and representatives of the Coast Guard are not present or not present in sufficient force to exercise effective control in the vicinity of large U.S. naval vessels, the senior naval officer present in command is responsible for the enforcement of the rules and regulations contained in this subpart to ensure the safety and security of all large naval vessels present. In meeting this responsibility, the senior naval officer present in command may directly assist any Coast Guard enforcement personnel who are present.

### §165.2025 Atlantic Area.

(2382) (a) This section applies to any vessel or person in the navigable waters of the United States within the boundaries of the U.S. Coast Guard Atlantic Area, which includes the First, Fifth, Seventh, Eighth and Ninth U.S. Coast Guard Districts.

(2383) **Note to §165.2025 paragraph (a)**: The boundaries of the U.S. Coast Guard Atlantic Area and the First, Fifth, Seventh, Eighth and Ninth U.S. Coast Guard Districts are set out in 33 CFR part 3.

(2384) (b) A naval vessel protection zone exists around U.S. naval vessels greater than 100 feet in length overall at all times in the navigable waters of the United States, whether the large U.S. naval vessel is underway, anchored, moored, or within a floating dry dock, except when the large naval vessel is moored or anchored within a restricted area or within a naval defensive sea area.

(2385) (c) The Navigation Rules shall apply at all times within a naval vessel protection zone.

(2386) (d) When within a naval vessel protection zone, all vessels shall operate at the minimum speed necessary

to maintain a safe course, unless required to maintain speed by the Navigation Rules, and shall proceed as directed by the Coast Guard, the senior naval officer present in command, or the official patrol. When within a naval vessel protection zone, no vessel or person is allowed within 100 yards of a large U.S. naval vessel unless authorized by the Coast Guard, the senior naval officer present in command, or official patrol.

(2387) (e) To request authorization to operate within 100 yards of a large U.S. naval vessel, contact the Coast Guard, the senior naval officer present in command, or the official patrol on VHF-FM channel 16.

(2388) (f) When conditions permit, the Coast Guard, senior naval officer present in command, or the official patrol should:

(2389) (1) Give advance notice on VHF-FM channel 16 of all large U.S. naval vessel movements;

(2390) (2) Permit vessels constrained by their navigational draft or restricted in their ability to maneuver to pass within 100 yards of a large U.S. naval vessel in order to ensure a safe passage in accordance with the Navigation Rules; and

(2391) (3) Permit commercial vessels anchored in a designated anchorage area to remain at anchor when within 100 yards of passing large U.S. naval vessels; and

(2392) (4) Permit vessels that must transit via a navigable channel or waterway to pass within 100 yards of a moored or anchored large U.S. naval vessel with minimal delay consistent with security.

(2393) **Note to §165.2025 paragraph (f):** The listed actions are discretionary and do not create any additional right to appeal or otherwise dispute a decision of the Coast Guard, the senior naval officer present in command, or the official patrol.

## Part 167-Offshore Traffic Separation Schemes

## Subpart A-General

### §167.1 Purpose.

(2394) The purpose of the regulations in this part is to establish and designate traffic separation schemes and precautionary areas to provide access routes for vessels proceeding to and from U.S. ports.

### §167.3 Geographic coordinates.

(2395) Geographic coordinates are defined using North American 1927 Datum (NAD 27) unless indicated otherwise.

### §167.5 Definitions.

(2396) (a) Area to be avoided means a routing measure comprising an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships or certain classes of ships.

(2397) (b) Traffic separation scheme (TSS) means a designated routing measure which is aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of traffic lanes.

(2398) (c) Traffic lane means an area within defined limits in which one-way traffic is established. Natural obstacles, including those forming separation zones, may constitute a boundary.

(2399) (d) Separation zone or line means a zone or line separating the traffic lanes in which ships are proceeding in opposite or nearly opposite directions; or separating a traffic lane from the adjacent sea area; or separating traffic lanes designated for particular classes of ships proceeding in the same direction.

(2400) (e) Precautionary area means a routing measure comprising an area within defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended.

(2401) (f) Deep-water route means an internationally recognized routing measure primarily intended for use by ships that, because of their draft in relation to the available depth of water in the area concerned, require the use of such a route.

(2402) (g) Two-way route means a route within defined limits inside which two-way traffic is established, aimed at providing safe passage of ships through waters where navigation is difficult or dangerous.

### §167.10 Operating rules.

(2403) The operator of a vessel in a TSS shall comply with Rule 10 of the International Regulations for Preventing Collisions at Sea, 1972, as amended.

### §167.15 Modification of schemes.

(2404) (a) A traffic separation scheme or precautionary area described in this part may be permanently amended in accordance with 33 U.S.C. 1223 (92 Stat. 1473), and with international agreements.

(2405) (b) A traffic separation scheme or precautionary area in this part may be temporarily adjusted by the Commandant of the Coast Guard in an emergency, or to accommodate operations which would create an undue hazard for vessels using the scheme or which would contravene Rule 10 of the International Regulations for Preventing Collisions at Sea, 1972. Adjustment may be in the form of a temporary traffic lane shift, a temporary suspension of a section of the scheme, a temporary precautionary area overlaying a lane, or other appropriate measure. Adjustments will only be made where, in the judgment of the Coast Guard, there is no reasonable alternative means of conducting an operation and navigation safety will not be jeopardized by the adjustment. Notice of adjustments will be made in the appropriate Notice to Mariners and in the Federal Register Requests by members of the public for temporary adjustments to traffic separation schemes must be submitted 150

days prior to the time the adjustment is desired. Such Requests, describing the interference that would otherwise occur to a TSS, should be submitted to the District Commander of the Coast Guard District in which the TSS is located.

## Subpart B-Description of Traffic Separation Schemes and Precautionary Areas

### §167.250 In the approaches to the Cape Fear River: General.

(2406) The traffic separation scheme (TSS) in the approaches to the Cape Fear River consists of two parts: A precautionary area and a TSS. The specific areas in the approaches to Narragansett Bay, RI, and

(2407) Buzzards Bay, MA, are described in §§167.251 and 167.252. The geographic coordinates in §§167.251 and 167.252 are defined using North American Datum 1983 (NAD 83), which is equivalent to WGS 1984 datum.

### §167.251 In the approaches to the Cape Fear River: Precautionary area.

(2408) A precautionary area is established bounded by a line connecting the following geographical positions: from

(2409) 33°47.65'N., 78°04.78'W.; to

(2410) 33°48.50'N., 78°04.27'W.; to

(2411) 33°49.53'N., 78°03.10'W.; to

(2412) 33°48.00'N., 78°01.00'W.; to

(2413) 33°41.00'N., 78°01.00'W.; to

(2414) 33°41.00'N., 78°04.00'W.; to

(2415) 33°44.28'N., 78°03.02'W.; then by an arc of 2 nautical miles radius, centered at

(2416) 33°46.03'N., 78°05.41'W.; then to the point of origin at 33°47.65'N., 78°04.78'W.

### §167.252 In the approaches to the Cape Fear River: Traffic Separation Scheme.

(2417) (a) A traffic separation zone is established bounded by a line connecting the following geographical positions:

(2418) 33°44.94'N., 78°04.81'W.

(2419) 33°32.75'N., 78°09.66'W.

(2420) 33°34.50'N., 78°14.70'W.

(2421) 33°45.11'N., 78°04.98'W.

(2422) (b) A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographic positions:

(2423) 33°32.75'N., 78°05.99'W.

(2424) 33°44.38'N., 78°03.77'W.

(2425) (c) A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographic positions:

(2426) 33°36.22'N., 78°18.00'W.

(2427) 33°46.03'N., 78°05.41'W.

(2428) **Note to §167.252:** A pilot boarding area is located inside the precautionary area. Due to heavy ship traffic, mariners are advised not to anchor or linger in the precautionary area except to pick up or disembark a pilot.

## Part 169–Ship Reporting Systems

## Subpart A–General

### §169.1 What is the purpose of this part?

(2429) This subpart prescribes the requirements for mandatory ship reporting systems. Ship reporting systems are used to provide, gather, or exchange information through radio reports. The information is used to provide data for many purposes including, but not limited to: navigation safety, maritime security and domain awareness, environmental protection, vessel traffic services, search and rescue, weather forecasting and prevention of marine pollution.

### §169.5 How are terms used in this part defined?

(2430) As used in this part–

(2431) Administration means the Government of the State whose flag the ship is entitled to fly.

(2432) Cargo ship means any ship which is not a passenger ship.

(2433) Flag Administration means the Government of a State whose flag the ship is entitled to fly.

(2434) Gross tonnage means tonnage as defined under the International Convention on Tonnage Measurement of Ships, 1969 (Incorporated by reference, see §169.15).

(2435) Gross tons means vessel tonnage measured in accordance with the method utilized by the flag state administration of that vessel.

(2436) High speed craft means a craft that is operable on or above the water and is capable of a maximum speed equal to or exceeding V=3.7xdispl1667, where "V" is the maximum speed and "displ" is the vessel displacement corresponding to the design waterline in cubic meters.

(2437) High speed passenger craft means a high speed craft carrying more than 12 passengers.

(2438) International voyage means a voyage from a country to which the present International Convention for the Safety of Life at Sea (SOLAS), 1974 applies to a port outside such country, or conversely. For U.S. ships, such voyages will be considered to originate at a port in the United States, regardless of when the voyage actually began. Such voyages for U.S. ships will continue until the ship returns to the United States from its last foreign port.

(2439) Long range identification and tracking (LRIT) information or position report means report containing the following information:

(2440) (1) The identity of the ship;

(2441) (2) The position of the ship (latitude and longitude); and

(2442) (3) The date and time of the position provided.

(2443) LRIT Data Center means a center established by a SOLAS Contracting Government or a group of Contracting Governments, or in the case of International Data Center, by IMO, to request, receive, process, and archive LRIT information. An LRIT Data Center may be National, Regional, Co-operative or International.

(2444) Mandatory ship reporting system means a ship reporting system that requires the participation of specified vessels or classes of vessels, and that is established by a government or governments after adoption of a proposed system by the International Maritime Organization (IMO) as complying with all requirements of regulation V/8–1 of the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS), except paragraph (e) thereof.

(2445) Mobile offshore drilling unit means a self-propelled vessel capable of engaging in drilling operations for the exploration or exploitation of subsea resources.

(2446) Passenger ship means a ship that carries more than 12 passengers.

(2447) Self-propelled ships means ships propelled by mechanical means.

(2448) Shore-based authority means the government appointed office or offices that will receive the reports made by ships entering each of the mandatary ship reporting systems. The office or offices will be responsible for the management and coordination of the system, interaction with participating ships, and the safe and effective operation of the system. Such an authority may or may not be an authority in charge of a vessel traffic service.

(2449) United States means the States of the United States, the District of Columbia, Guam, Puerto Rico, the Virgin Islands, American Samoa, the Northern Mariana Islands, and any other territory or possession of the United States.

### §169.10 What geographic coordinates are used?

(2450) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts where the referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

### §169.15 Incorporation by reference: Where can I get a copy of the publications mentioned in this part?

(2451) (a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. Also, it is available for inspection at the Coast Guard, Office of Navigation Systems (CG-5532), 2100 2nd St. SW., Stop 7580, Washington, DC 20593-7580, and is available from the sources indicated in this section.

(2452) (b) International Electrotechnical Commission (IEC) Bureau Central de la Commission Electrotechnique Internationale, 3 rue de Varembé, P.O. Box 131, 1211 Geneva 20, Switzerland.

(2453) (1) IEC 60945, Fourth edition 2002-08, Maritime navigation and radiocommunication equipment and systems–General requirements–Methods of testing and required test results, incorporation by reference approved for §169.215.

(2454) (2) [Reserved]

(2455) (c) International Maritime Organization (IMO), 4 Albert Embankment, London SE1 7SR, U.K.

(2456) (1) IMO Resolution MSC.202(81), adopted on May 19, 2006, Adoption of Amendments to the International Convention for the Safety of Life at Sea, 1974, as Amended, incorporation by reference approved for §160.240.

(2457) (2) IMO Resolution MSC. 210(81), adopted on May 19, 2006, Performance Standards and Functional Requirements for the Long-Range Identification and Tracking of Ships, incorporation by reference approved for §§169.215 and 169.240.

(2458) (3) IMO Resolution MSC.254(83), adopted on October 12, 2007, Adoption of Amendments to the Performance Standards and Functional Requirements for the Long-Range Identification and Tracking of Ships, incorporation by reference approved for §§169.215 and 169.240.

(2459) (4) IMO Resolution A.694(17), adopted on November 6, 1991, General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids, incorporation by reference approved for §165.215.

(2460) (5) International Convention on Tonnage Measurement of Ships, 1969, incorporation by reference approved for §169.5.

## Subpart B–Establishment of Two Mandatory Ship Reporting Systems for the Protection of Northern Right Whales

### §169.100 What mandatory ship reporting systems are established by this subpart?

(2461) This subpart prescribes requirements for the establishment and maintenance of two mandatory ship reporting systems for the protection of the endangered northern right whale (also known as the North Atlantic right whale). These two systems are designated for certain areas of the East Coast of the United States. One system is located in the northeast and is identified as WHALESNORTH. The other system is located in the southeast and is identified as WHALESSOUTH.

(2462) **Note:** 50 CFR 224.103(c) contains requirements and procedures concerning northern right whale approach limitations and avoidance procedures.

### §169.102 Who is the shore-based authority?

(2463) The U.S. Coast Guard is the shore-based authority for these mandatory ship reporting systems.

### §169.105 Where is the northeastern reporting system located?

(2464) Geographical boundaries of the northeastern area include the waters of Cape Cod Bay, Massachusetts Bay, and the Great South Channel east and southeast of Massachusetts. The coordinates (NAD 83) of the area are as follows: from a point on Cape Ann, Massachusetts at

(2465) 42°39'N., 70°37'W.; then northeast to

(2466) 42°45'N., 70°13'W.; then southeast to

(2467) 42°10'N., 68°31'W.; then south to

(2468) 41°00'N., 68°31'W.; then west to

(2469) 41°00'N., 69°17'W.; then northwest to

(2470) 42°05'N., 70°02'W.; then west to

(2471) 42°04'N., 70°10'W.; and then along the Massachusetts shoreline of Cape Cod Bay and Massachusetts Bay back to the point on Cape Ann at

(2472) 42°39'N., 70°37'W.

### §169.110 When is the northeastern reporting system in effect?

(2473) The mandatory ship reporting system in the northeastern United States operates year-round.

### §169.115 Where is the southeastern reporting system located?

(2474) Geographical boundaries of the southeastern area include coastal waters within about 25 nautical miles (45 kilometers) along a 90-nautical mile (170-kilometer) stretch of the Atlantic seaboard in Florida and Georgia. The area coordinates (NAD 83) extends from the shoreline east to longitude 80°51.6'W with the southern and northern boundaries at latitude 30°00'N and 31°27'N., respectively.

### §169.120 When is the southeastern reporting system in effect?

(2475) The mandatory ship reporting system in the southeastern United States operates during the period beginning on November 15 each year through April 16 of the following year.

### §169.125 What classes of ships are required to make reports?

(2476) Each self-propelled ship of 300 gross tons or greater must participate in the reporting systems, except government ships exempted from reporting by regulation V/8–1(c) of SOLAS. However, exempt ships are encouraged to participate in the reporting systems.

### §169.130 When are ships required to make reports?

(2477) Participating ships must report to the shore-based authority upon entering the area covered by a reporting system. Additional reports are not necessary for movements made within a system or for ships exiting a system.

### §169.135 How must the reports be made?

(2478) (a) A ship equipped with INMARSAT C must report in IM0 standard format as provided in §169.140 in table 169.140.

(2479) (b) A ship not equipped with INMARSAT C must report to the Coast Guard using other means, listed below in order of precedence–

(2480) (1) Narrow band direct printing (SITOR).

(2481) (2) HF voice communication, or

(2482) (3) MF or VHF voice communications.

(2483) (c) SITOR or HF reports made directly to the Coast Guard's Communications Area Master Station Atlantic (CAMSLANT) in Chesapeake, VA, or MF or VHF reports

**TABLE 169.140 – Requirements for Ship Reports**

| Telegraphy | Function | Information required |
|---|---|---|
| Name of system | System identifier | Ship reporting system WHALESNORTH or WHALESSOUTH. |
| M | INMARSAT Number | Vessel INMARSAT number |
| A | Ship | The name, call sign or ship station identity, IMO number, and flag of the vessel. |
| B | Date and time of event | A 6-digit group giving day of month (first two digits), hours and minutes (last four digits). |
| E | True course | A 3-digit group indicating true course. |
| F | Speed in knots and tenths of knots | A 3-digit group. |
| H | Date, time and point of entry into system | Entry time expressed as in (B) and entry position expressed as- (1) a 4-digit group giving latitude in degrees and minutes suffixed with N(north) or S (south) and a 5-digit group giving longitude in degrees and minutes suffixed with E (east) or W (west); or (2) True bearing (first 3 digits) and distance (state distance) in nautical miles from a clearly identified landmark (state landmark) |
| I | Destination and expected time of arrival | Name of port and date time group expressed as in (B) |
| L | Route information | Intended track. |

made to Coast Guard activities or groups, should only be made by ships not equipped with INMARSAT C. Ships in this category must provide all the required information to the Coast Guard watchstander.

**§169.140 What information must be included in the report?**

(2484) Each ship report made to the shore-based authority must follow the standard reporting and format requirements listed in this section in table 169.140. Current email addresses and telex numbers are published annually in the U.S. Coast Pilot.

## Subpart C-Transmission of Long Range Identification and Tracking Information

**§169.200 What is the purpose of this subpart?**

(2485) This subpart implements Regulation 19-1 of SOLAS Chapter V (SOLAS V/19-1) and requires certain ships engaged on an international voyage to transmit vessel identification and position information electronically. This requirement enables the Coast Guard to obtain long range identification and tracking (LRIT) information and thus heightens our overall maritime domain awareness, enhances our search and rescue operations, and increases our ability to detect anomalies and deter transportation security incidents.

**§169.205 What types of ships are required to transmit LRIT information (position reports)?**

(2486) The following ships, while engaged on an international voyage, are required to transmit position reports:

(2487) (a) A passenger ship, including high speed passenger craft.

(2488) (b) A cargo ship, including high speed craft, of 300 gross tonnage or more.

(2489) (c) A mobile offshore drilling unit while underway and not engaged in drilling operations.

**§169.210 Where during its international voyage must a ship transmit position reports?**

(2490) The requirements for the transmission of position reports, imposed by the United States, vary depending on the relationship of the United States to a ship identified in §169.205.

(2491) (a) Flag State relationship. A U.S. flag ship engaged on an international voyage must transmit position reports wherever they are located.

(2492) (b) Port State relationship. A foreign flag ship engaged on an international voyage must transmit position reports after the ship has announced its intention to enter a U.S. port or place under requirements in 33 CFR part 160, subpart C.

(2493) (c) Coastal State relationship. A foreign flag ship engaged on an international voyage must transmit position reports when the ship is within 1,000 nautical miles of the baseline of the United States, unless their Flag Administration, under authority of SOLAS V/19-1.9.1, has directed them not to do so.

**§169.215 How must a ship transmit position reports?**

(2494) A ship must transmit position reports using Long Range Identification and Tracking (LRIT) equipment that has been type-approved by their Administration. To be type-approved by the Coast Guard, LRIT equipment must meet the requirements of IMO Resolutions A.694(17), MSC.210(81), and MSC.254(83), and IEC standard IEC 60945 (Incorporated by reference, see §169.15).

**§169.220 When must a ship be fitted with LRIT equipment?**

(2495) A ship identified in §169.205 must be equipped with LRIT equipment–

(2496) (a) Before getting underway, if the ship is constructed on or after December 31, 2008.

(2497) (b) By the first survey of the radio installation after December 31, 2008, if the ship is–

(2498) (1) Constructed before December 31, 2008, and

(2499) (2) Operates within–

(2500) (i) One hundred (100) nautical miles of the United States baseline, or

(2501) (ii) Range of an Inmarsat geostationary satellite, or other Application Service Provider recognized by the Administration, with continuous alerting is available.

(2502) (c) By the first survey of the radio installation after July 1, 2009, if the ship is–

(2503) (1) Constructed before December 31, 2008, and

(2504) (2) Operates within the area or range specified in paragraph (b)(2) of this section as well as outside the range of an Inmarsat geostationary satellite with which continuous alerting is available. While operating in the area or range specified in paragraph (b)(2) of this section, however, a ship must install LRIT equipment by the first survey of the radio installation after December 31, 2008.

**§169.225 Which Application Service Providers may a ship use?**

(2505) A ship may use an application Service Provider (ASP) recognized by its administration. Some Communication Service Providers may also serve as an ASP.

**§169.230 How often must a ship transmit position reports?**

(2506) A ship's LRIT equipment must transmit position reports at 6-hour intervals unless a more frequent interval is requested remotely by an LRIT Data Center.

**§169.235 What exemptions are there from reporting?**

(2507) A ship is exempt from this subpart if it is–

(2508) (a) Fitted with an operating automatic identification system (AIS), under 33 CFR 164.46, and operates only within 20 nautical miles of the United States baseline,

(2509) (b) A warship, naval auxiliaries or other ship owned or operated by a SOLAS Contracting Government and used only on Government non-commercial service, or

(2510) (c) A ship solely navigating the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.

### §169.240 When may LRIT equipment be switched off?

(2511) A ship engaged on an international voyage may switch off its LRIT equipment only when it is permitted by its Flag Administration, in circumstances detailed in SOLAS V/19–1.7, or in paragraph 4.4.1, of resolution MSC.210(81), as amended by resolution MSC.254(83) (Incorporated by reference, see §169.15).

### §169.245 What must a ship master do if LRIT equipment is switched off or fails to operate?

(2512) (a) If a ship's LRIT equipment is switched off or fails to operate, the ship's master must inform his or her Flag Administration without undue delay.

(2513) (b) The master must also make an entry in the ship's logbook that states–

(2514) (1) His or her reason for switching the LRIT equipment off, or an entry that the equipment has failed to operate, and

(2515) (2) The period during which the LRIT equipment was switched off or non-operational.

(2516) **Note to §169.245**: for U.S. vessels, the U.S. Coast Guard serves as the Flag Administration for purposes of this section. All LRIT notifications for the U.S. Flag administration, in addition to requests or questions about LRIT, should be communicated to the U.S. Coast Guard by e-mail addressed to LRIT@uscg.mil.

## Part 207–Navigation Regulations

### §207.160 All waterways tributary to the Atlantic Ocean south of Chesapeake Bay and all waterways tributary to the Gulf of Mexico east and south of St. Marks, FL; use, administration, and navigation.

(2517) (a) Description. This section applies to the following:

(2518) (1) Waterways. All navigable waters of the United States, natural or artificial, including bays, lakes, sounds, rivers, creeks, intracoastal waterways, as well as canals and channels of all types, which are tributary to or connected by other waterways with the Atlantic Ocean south of Chesapeake Bay or with the Gulf of Mexico east and south of St. Marks, Florida.

(2519) (2) Locks. All Government owned or operated locks and hurricane gate chambers and appurtenant structures in any of the waterways described in paragraph (a) (1) of this section.

(2520) (3) United States property. All river and harbor lands owned by the United States in or along the waterways described in paragraph (a) (1) of this section, including lock sites and all structures thereon, other sites for Government structures and for the accommodation and use of employees of the United States, and rights of way and spoil disposal areas to the extent of Federal interest therein.

(2521) (4) Vessels and rafts. The term "vessels" as used in this section includes all floating things moved over these waterways other than rafts.

(2522) (b) Authority of District Engineers. The use, administration, and navigation of these waterways, Federal locks and hurricane gate chambers shall be under the direction of the officers of the Corps of Engineers, United States Army, detailed in charge of the respective sections, and their authorized assistants. The cities in which the U.S. District Engineers are located are as follows:

(2523) U.S. District Engineer, Norfolk, Virginia.

(2524) U.S. District Engineer, Wilmington, North Carolina.

(2525) U.S. District Engineer, Charleston, South Carolina.

(2526) U.S. District Engineer, Savannah, Georgia.

(2527) U.S. District Engineer, Jacksonville, Florida.

(2528) (c) [Reserved].

(2529) (d) Bridges. (For regulations governing the operation of bridges, see 33 CFR 117.1, 117.240, and 117.245.)

(2530) (e) Locks–(1) Authority of Lockmasters

(2531) (i) Locks Staffed with Government Personnel. The provisions of this subparagraph apply to all waterways in this Section except for the segment of the Atlantic Intracoastal Waterway identified in (e)(1)(ii). The lockmaster shall be charged with the immediate control and management of the lock, and of the area set aside as the lock area, including the lock approach channels. He/she shall see that all laws, rules and regulations for the use of the lock and lock area are duly complied with, to which end he/she is authorized to give all necessary orders and directions in accordance therewith, both to employees of the Government and to any and every person within the limits of the lock and lock area, whether navigating the lock or not. No one shall cause any movement of any vessel, boat, or other floating thing in the lock or approaches except by or under the direction of the lockmaster or his/her assistants.

(2532) (ii) Locks Staffed with Contract Personnel. The provisions of this subparagraph apply to the segment of the Atlantic Intracoastal Waterway comprising the Albemarle and Chesapeake Canal and the Dismal Swamp Canal including Great Bridge Lock, Chesapeake, Virginia; Deep Creek Lock, Chesapeake, Virginia; and South Mills Lock, North Carolina. Contract personnel shall give all necessary orders and directions for operation

of the locks. No one shall cause any movement of any vessel, boat or other floating thing in the locks or approaches except by or under the direction of the contract lock operator. All duties and responsibilities of the lockmaster set forth in this Section shall be performed by the contract lock operator except that the responsibility for enforcing all laws, rules and regulations shall be vested in a government employee designated by the Norfolk District Engineer. The District Engineer will notify waterway users and the general public through appropriate notices and media concerning the location and identity of the designated government employee.

(2533) (2) Signals. Vessels desiring lockage in either direction shall give notice to the lockmaster at not more than three-quarters of a mile nor less than one-quarter of a mile from the lock, by two long and two short blasts of a whistle. When the lock is available, a green light, semaphore or flag will be displayed; when not available, a red light, semaphore or flag will be displayed. No vessels or rafts shall approach within 300 feet of any lock entrance unless signalled to do so by the lockmaster.

(2534) (3) Precedence at locks. (i) The vessel arriving first at a lock shall be first to lock through; but precedence shall be given to vessels belonging to the United States and to commercial vessels in the order named. Arrival posts or markers may be established ashore above or below the locks. Vessels arriving at or opposite such posts or markers will be considered as having arrived at the locks within the meaning of this paragraph.

(2535) (ii) The lockage of pleasure boats, house boats or like craft shall be expedited by locking them through with commercial craft (other than barges carrying petroleum products or highly hazardous materials) in order to utilize the capacity of the lock to its maximum. If, after the arrival of such craft, no separate or combined lockage can be accomplished within a reasonable time not to exceed the time required for three other lockages, then separate lockage shall be made.

(2536) (4) Entrance to and exit from locks. No vessel or raft shall enter or leave the locks before being signalled to do so. While waiting their turns, vessels or rafts must not obstruct traffic and must remain at a safe distance from the lock. They shall take position in rear of any vessels or rafts that may precede them, and there arrange the tow for locking in sections if necessary. Masters and pilots of vessels or in charge of rafts shall cause no undue delay in entering or leaving the lock, and will be held to a strict accountability that the approaches are not at any time unnecessarily obstructed by parts of a tow awaiting lockage or already passed through. They shall provide sufficient men to move through the lock promptly without damage to the structures. Vessels or tows that fail to enter the locks with reasonable promptness after being signalled to do so will lose their turn.

(2537) (5) Lockage of vessels. (i) Vessels must enter and leave the locks carefully at slow speed, must be provided with suitable lines and fenders, must always use fenders to protect the walls and gates, and when locking at night must be provided with suitable lights and use them as directed.

(2538) (ii) Vessels which do not draw at least six inches less than the depth on miter sills or breast walls, or which have projections or sharp corners liable to damage gates or walls, shall not enter a lock or approaches.

(2539) (iii) No vessel having chains or lines either hanging over the sides or ends, or dragging on the bottom, for steering or other purposes, will be permitted to pass a lock or dam.

(2540) (iv) Power vessels must accompany tows through the locks when so directed by the lockmaster.

(2541) (v) No vessel whose cargo projects beyond its sides will be admitted to lockage.

(2542) (vi) Vessels in a sinking condition shall not enter a lock or approaches.

(2543) (vii) The passing of coal from flats or barges to steamers while in locks is prohibited.

(2544) (viii) Where special regulations for safeguarding human life and property are desirable for special situations, the same may be indicated by printed signs, and in such cases such signs will have the same force as other regulations in this section.

(2545) (ix) The lockmaster may refuse to lock vessels which, in his judgment, fail to comply with this paragraph.

(2546) (6) Lockage of rafts. Rafts shall be locked through in sections as directed by the lockmaster. No raft will be locked that is not constructed in accordance with the requirements stated in paragraph (g) of this section. The party in charge of a raft desiring lockage shall register with the lockmaster immediately upon arriving at the lock and receive instructions for locking.

(2547) (7) Number of lockages. Tows or rafts locking in sections will generally be allowed only two consecutive lockages if one or more single vessels are waiting for lockage, but may be allowed more in special cases. If tows or rafts are waiting above and below a lock for lockage, sections will be locked both ways alternately whenever practicable. When there are two or more tows or rafts awaiting lockage in the same direction, no part of one shall pass the lock until the whole of the one preceding it shall have passed.

(2548) (8) Mooring. (i) Vessels and rafts when in the lock shall be moored where directed by the lockmaster by bow, stern and spring lines to the snubbing posts or hooks provided for that purpose, and lines shall not be let go until signal is given for vessel or raft to leave. Tying boats to the lock ladders is prohibited.

(2549) (ii) The mooring of vessels or rafts near the approaches to locks except while waiting for lockage, or at other places in the pools where such mooring interferes with general navigation of the waterway is prohibited.

(2550) (9) Maneuvering locks. The lock gates, valves, and accessories will be moved only under the direction of the lockmaster; but if required, all vessels and rafts using the locks must furnish ample help on the lock walls

for handling lines and maneuvering the various parts of the lock under the direction of the lockmaster.

(2551) (f) [Reserved]

(2552) (g) Rafts, logging. (1) Rafts will be permitted to navigate a waterway only if properly and securely assembled. The passage of "bag" or "sack" rafts, "dog" rafts, or of loose logs over any portion of a waterway, is prohibited. Each section of a raft will be secured within itself in such a manner as to prevent the sinking of any log, and so fastened or tied with chains or wire rope that it cannot be separated or bag out so as to materially change its shape. All dogs, chains and other means used in assembling rafts shall be in good condition and of ample size and strength to accomplish their purposes.

(2553) (2) No section of a raft will be permitted to be towed over any portion of a waterway unless the logs float sufficiently high in the water to make it evident that the section will not sink en route.

(2554) (3) Frequent inspections will be made by the person in charge of each raft to insure that all fastenings remain secure, and when any one is found to have loosened, it shall be repaired at once. Should any log or section be lost from a raft, the fact must be promptly reported to the District Engineer, giving as definitely as possible the exact point at which the loss occurred. In all cases the owner of the lost log or section will take steps immediately to remove the same from the waterway.

(2555) (4) The length and width of rafts shall not exceed such maximum dimensions as may be prescribed by the District Engineer.

(2556) (5) All rafts shall carry sufficient men to enable them to be managed properly, and to keep them from being an obstruction to other craft using the waterway. To permit safe passage in a narrow channel rafts will, if necessary, stop and tie up alongside the bank. Care must be exercised both in towing and mooring rafts to avoid the possibility of damage to aids to navigation maintained by the United States or under its authorization.

(2557) (6) When rafts are left for any reason with no one in attendance, they must be securely tied at each end and at as many intermediate points as may be necessary to keep the timbers from bagging into the stream, and must be moored so as to conform to the shape of the bank. Rafts moored to the bank shall have lights at 500-foot intervals along their entire length. Rafts must not be moored at prominent projections of the bank, or at critical sections.

(2558) (7) Logs may be stored in certain tributary streams provided a clear channel at least one-half the width of the channel be left clear for navigation along the tributary. Such storage spaces must be protected by booms and, if necessary to maintain an open channel, piling should also be used. Authority for placing these booms and piling must be obtained by written permit from the District Engineer.

(2559) (8) The building, assembling, or breaking up of a raft in a waterway will be permitted only upon special authority obtained from the District Engineer, and under such conditions as he may prescribe.

(2560) (h) Dumping of refuse or oil in waterway, obstructions. Attention is invited to the provisions of sections 13 and 20 of the River and Harbor Act of March 3, 1899 (30 Stat. 1152, 1154; 33 U.S.C. 407, 415), and of sections 2, 3, and 4 of the Oil Pollution Act of June 7, 1924 (43 Stat. 604, 605; 33 U.S.C. 432-434), which prohibit the depositing of any refuse matter in these waterways or along their banks where liable to be washed into the waters; authorize the immediate removal or destruction of any sunken vessel, craft, raft, or other similar obstruction, which stops or endangers navigation; and prohibit the discharge of oil from vessels into the coastal navigable waters of the United States.

(2561) (i) Damage. Masters and owners of vessels using the waterways are responsible for any damage caused by their operations to canal revetments, lock piers and walls, bridges, hurricane gate chambers, spillways, or approaches thereto, or other Government structures, and for displacing or damaging of buoys, stakes, spars, range lights or other aids to navigation. Should any part of a revetment, lock, bridge, hurricane gate chamber, spillway or approach thereto, be damaged, they shall report the fact, and furnish a clear statement of how the damage occurred, to the nearest Government lockmaster or bridge tender, and by mail to the District Engineer, U.S. Engineer Office in local charge of the waterway in which the damage occurred. Should any aid to navigation be damaged, they shall report that fact immediately to the Superintendent of Lighthouses at Norfolk, Virginia, if north of New River Inlet, North Carolina; to the Superintendent of Lighthouses at Charleston, South Carolina, if between New River Inlet, North Carolina, and St. Lucie Inlet, Florida; to the Superintendent of Lighthouses at Key West, Florida, if between St. Lucie Inlet and Suwanee River, Florida; and to the Superintendent of Lighthouses, New Orleans, Louisiana, if between Suwanee River and St. Marks, Florida.

(2562) (j) Trespass on property of the United States. Trespass on waterway property or injury to the banks, locks, bridges, piers, fences, trees, houses, shops or any other property of the United States pertaining to the waterway, is strictly prohibited. No business, trading or landing of freight or baggage will be allowed on or over Government piers, bridges, or lock walls.

(2563) (k) Copies of regulations. Copies of the regulations in this section will be furnished free of charge upon application to the nearest District Engineer.

### §207.169 Oklawaha River, navigation lock and dam at Moss Bluff, Fla.; use, administration and navigation.

(2564) (a) The owner of or agency controlling the lock shall not be required to operate the navigation lock except from 7 a.m. to 7 p.m. during the period of February 15 through October 15 each year, and from 8 a.m. to 6 p.m. during the remaining months of the year. During

the above hours and periods the lock shall be opened upon demand for the passage of vessels. The hours of operation are based on local time.

(2565) (b) The owner of or agency controlling the lock shall place signs of such size and description as may be designated by the District Engineer, U.S. Army Engineer District, Jacksonville, Fla., at each side of the lock indicating the nature of the regulations of this section.

**§207.170 Federal Dam, Oklawaha River, Moss Bluff, Fla.; pool level.**

(2566) (a) The level of the pool shall normally be maintained at elevation 56.5 feet above sea level: Provided, That the level of the pool may be raised to not exceeding 58.5 feet above sea level at such times as may be authorized in writing by the District Engineer, Jacksonville, Fla., and subject to such conditions as he may specify.

(2567) (b) When in the opinion of the District Engineer, an emergency exists requiring the lowering of the pool level to an elevation less than 56.5 above sea level either to safeguard the dikes or to increase the discharge from Lake Griffin in times of high water, the discharge past the dam shall be regulated in such manner as he may direct until he shall declare the emergency passed.

**§207.170a Eugene J. Burrell Navigation Lock in Haines Creek near Lisbon, Florida; use, administration and navigation.**

(2568) (a) The owner of or agency controlling the lock shall not be required to operate the navigation lock except from 7 a.m. to 12 noon, and from 1 p.m. to 7 p.m., during the period of February 15 through October 15 each year; and from 8 a.m. to 12 noon, and from 1 p.m. to 6 p.m., during the remaining months of each year. During the above hours and periods the lock shall be opened upon demand for the passage of vessels.

(2569) (b) The owner of the lock shall place signs, of such size and description as may be designated by the District Engineer, U.S. Army Engineer District, Jacksonville, Florida, at each side of this lock indicating the nature of the regulations of this section.

**§207.170b Apopka-Beauclair Navigation Lock in Apopka-Beauclair Canal in Lake County, Florida; use, administration and navigation.**

(2570) (a) The owner of or agency controlling the lock shall not be required to operate the navigation lock except from 7:00 a.m. to 12:00 noon, and from 1:00 p.m. to 7:00 p.m., during the period of February 15 through October 15 each year; and from 8:00 a.m. to 12 noon, and from 1:00 p.m. to 6:00 p.m., during the remaining months of each year. During the above hours and periods the lock shall be opened upon demand for the passage of vessels.

(2571) (b) The owner of the lock shall place signs, of such size and descriptions as may be designated by the District Engineer, U.S. Army Engineer District, Jacksonville, Florida, at each side of this lock indicating the nature of the regulations.

**§207.170c Kissimmee River, navigation locks between Lake Tohopekaliga and Lake Okeechobee, Fla.; use, administration and navigation.**

(2572) (a) The owner of or agency controlling the locks shall be required to open the navigation locks upon demand for passage of vessels during the following hours and periods:

(2573) Locks S–61, S–65, and S–65E:

(2574) Monday through Friday, all year; 7:00 a.m. to 6:00 p.m.

(2575) Saturday and Sunday, Mar. 1 through Oct. 31; 5:30 a.m. to 7:30 p.m.

(2576) Saturday and Sunday, Nov. 1 through Feb. 28; 5:30 a.m. to 6:30 p.m.

(2577) Lock S–65A:

(2578) Seven days a week, all year; 8:00 a.m. to 5:00 p.m.

(2579) Locks S–65B, S–65C, and S–65D:

(2580) Monday through Friday, all year; 8:00 a.m. to 5:00 p.m.

(2581) Saturday and Sunday, Mar. 1 through Oct. 31; 5:30 a.m. to 7:30 p.m.

(2582) Saturday and Sunday, Nov. 1 through Feb. 28; 5:30 a.m. to 6:30 p.m.

(2583) (b) The owner of or agency controlling the locks shall place signs, of such size and description as may be designated by the District Engineer, U.S. Army Engineer District, Jacksonville, Florida, at each side of the locks indicating the nature of the regulations of this section.

**§207.170d Taylor Creek, navigation lock (S-193) across the entrance to Taylor Creek at Lake Okeechobee, Okeechobee, Fla.; use, administration and navigation.**

(2584) (a) The owner of or agency controlling the lock shall not be required to operate the navigation lock except from 5:30 a.m. to 8:00 p.m. daily. During the above hours the lock shall be opened upon demand for the passage of vessels.

(2585) (b) The owner of the lock shall place signs, of such size and description as may be designated by the District Engineer, U.S. Army Engineer District, Jacksonville, Florida at each side of this lock indicating the nature of the regulations of this section.

**§207.800 Collection of navigation statistics.**

(2586) (a) Definitions. For the purpose of this regulation the following terms are defined:

(2587) (1) Navigable waters of the United States means those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. (See 33 CFR part 329 for a more complete definition of this term.)

(2588) (2) Offenses and Violations mean:

(2589) (i) Failure to submit a required report.

(2590) (ii) Failure to provide a timely, accurate, and complete report.

(2591) (iii) Failure to submit monthly listings of idle vessels or vessels in transit.

(2592) (iv) Failure to submit a report required by the lockmaster or canal operator.

(2593) (3) Leased or chartered vessel means a vessel that is leased or chartered when the owner relinquishes control of the vessel through a contractual agreement with a second party for a specified period of time and/or for a specified remuneration from the lessee. Commercial movements on an affreightment basis are not considered a lease or charter of a particular vessel.

(2594) (4) Person or entity means an individual, corporation, partnership, or company.

(2595) (5) Timely means vessel and commodity movement data must be received by the Waterborne Commerce Statistics Center within 30 days after the close of the month in which the vessel movement or nonmovement takes place.

(2596) (6) Commercial vessel means a vessel used in transporting by water, either merchandise or passengers for compensation or hire, or in the course of business of the owner, lessee, or operator of the vessel.

(2597) (7) Reporting situation means a vessel movement by an operator that is required to be reported. Typical examples are listed in the instructions on the various ENG Forms. Five typical movements that are required to be reported by vessel operating companies include the following examples:

(2598) Company A is the barge owner, and the barge transports corn from Minneapolis, MN to New Orleans, LA, with fleeting at Cairo, IL.

(2599) (i) Lease/Charter: If Company A leases or charters the barge to Company B, then Company B is responsible for reporting the movements of the barge until the lease/charter expires.

(2600) (ii) Interline Movement: A barge is towed from Minneapolis to Cairo by Company A, and from Cairo to New Orleans by Company B. Since Company A is the barge owner, and the barge is not leased. Company A reports the entire movement of the barge with an origin of Minneapolis and a destination of New Orleans.

(2601) (iii) Vessel Swap/Trade: Company A swaps barge with Company B to allow Company B to meet a delivery commitment to New Orleans. Since Company A has not leased/chartered the barge, Company A is responsible for filing the report. Company B is responsible for filing the report on the barge which is traded to Company A. The swap or trade will not affect the primary responsibility for reporting the individual vessel movements.

(2602) (iv) Re-Consignment: Barge is reconsigned to Mobile, AL. Company A reports the movements as originating in Minneapolis and terminating in Mobile. The point from which barge is reconsigned is not reported, only points of loading and unloading.

(2603) (v) Fleeting: Barge is deposited at a New Orleans fleeting area by Company A and towed by Company B from fleeting area to New Orleans area dock for unloading. Company A, as barge owner, reports entire movements from Minneapolis to the unloading dock in New Orleans. Company B does not report any barge movement.

(2604) (b) Implementation of the waterborne commerce statistics provisions of the River and Harbor Act of 1922, as amended by the Water Resources Development Act of 1986 (Pub. L. 99-662), mandates the following.

(2605) (1) Filing Requirements. Except as provided in paragraph (b)(2) of this section, the person or entity receiving remuneration for the movement of vessels or for the transportation of goods or passengers on the navigable waters is responsible for assuring that the activity report of commercial vessels is timely filed.

(2606) (i) For vessels under lease/charter agreements, the lessee or charterer of any commercial vessel engaged in commercial transportation will be responsible for the filing of said reports until the lease/charter expires.

(2607) (ii) The vessel owner, or his designated agent, is always the responsible party for ensuring that all commercial activity of the vessel is timely reported.

(2608) (2) The following Vessel Information Reports are to be filed with the Army Corps of Engineers, at the address specified on the ENG Form, and are to include:

(2609) (i) Monthly Reports. These reports shall be made on ENG Forms furnished upon written request of the vessel operating companies to the Army Corps of Engineers. The forms are available at the following address: U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, Post Office Box 62180, New Orleans, LA 70161-1280.

(2610) (A) All movements of domestic waterborne commercial vessels shall be reported, including but not limited to: Dry cargo ship and tanker moves, loaded and empty barge moves, towboat moves, with or without barges in tow, fishing vessels, movements of crew boats and supply boats to offshore locations, tugboat moves and movements of newly constructed vessels from the shipyard to the point of delivery.

(2611) (B) Vessels idle during the month must also be reported.

(2612) (C) Notwithstanding the above requirements, the following waterborne vessel movements need not be reported:

(2613) (1) Movements of recreational vessels.

(2614) (2) Movements of fire, police, and patrol vessels.

(2615) (3) Movements of vessels exclusively engaged in construction (e.g., piledrivers and crane barges). **Note:** however, that movements of supplies, materials, and crews to or from the construction site must be timely reported.

(2616) (4) Movements of dredges to or from the dredging site. However, vessel movements of dredged material from the dredging site to the disposal site must be reported.

(2617) (5) Specific movements granted exemption in writing by the Waterborne Commerce Statistics Center.

(2618) (D) ENG Forms 3925 and 3925b shall be completed and filed by vessel operating companies each month for all voyages or vessel movements completed during the month. Vessels that did not complete a move during the month shall be reported as idle or in transit.

(2619) (E) The vessel operating company may request a waiver from the Army Corps of Engineers, and upon written approval by the Waterborne Commerce Center, the company may be allowed to provide the requisite information of the above paragraph (D), on computer printouts, magnetic tape, diskettes, or alternate medium approved by the Center.

(2620) (F) Harbor Maintenance Tax information is required on ENG Form 3925 for cargo movements into or out of ports that are subject to the provisions of section 1402 of the Water Resources Development Act of 1986 (Pub. L. 99-662).

(2621) (1) The name of the shipper of the commodity, and the shipper 0146's Internal Revenue Service number or Social Security number, must be reported on the form.

(2622) (2) If a specific exemption applies to the shipper, the shipper should list the appropriate exemption code. The specific exemption codes are listed in the directions for ENG Form 3925.

(2623) (3) Refer to 19 CFR part 24 for detailed information on exemptions and ports subject to the Harbor Maintenance Tax.

(2624) (ii) Annual Reports. Annually an inventory of vessels available for commercial carriage of domestic commerce and vessel characteristics must be filed on ENG Forms 3931 and 3932.

(2625) (iii) Transaction Reports. The sale, charter, or lease of vessels to other companies must also be reported to assure that proper decisions are made regarding each company's duty for reporting vessel movements during the year. In the absence of notification of the transaction, the former company of record remains responsible until proper notice is received by the Corps.

(2626) (iv) Reports to Lockmasters and Canal Operators. Masters of self-propelled non-recreational vessels which pass through locks and canals operated by the Army Corps of Engineers will provide the data specified on ENG Forms 3102b, 3102c, and/or 3102d to the lockmaster, canal operator, or his designated representative in the manner and detail dictated.

(2627) (c) Penalties for Noncompliance. The following penalties for noncompliance can be assessed for offenses and violations.

(2628) (1) Criminal Penalties. Every person or persons violating the provisions of this regulation shall, for each and every offenses, be liable to a fine of not more than $5,000, or imprisonment not exceeding two months, to be enforced in any district court in the United States within whose territorial jurisdiction such offense may have been committed.

(2629) (2) Civil Penalties. In addition, any person or entity that fails to provide timely, accurate, and complete statements or reports required to be submitted by this regulation may also be assessed a civil penalty of up to $2,500 per violation under 33 U.S.C. 555, as amended.

(2630) (3) Denial of Passage. In addition to these fines, penalties, and imprisonments, the lockmaster or canal operator can refuse to allow vessel passage.

(2631) (d) Enforcement Policy. Every means at the disposal of the Army Corps of Engineers will be utilized to monitor and enforce these regulations.

(2632) (1) To identify vessel operating companies that should be reporting waterborne commerce data, The Corps will make use of, but is not limited to, the following sources.

(2633) (i) Data on purchase and sale of vessels.

(2634) (ii) U.S. Coast Guard vessel documentation and reports.

(2635) (iii) Data collected at Locks, Canals, and other facilities operated by the Corps.

(2636) (iv) Data provided by terminals on ENG Form 3926.

(2637) (v) Data provided by the other Federal agencies including the Internal Revenue Service, Customs Service, Maritime Administration, Department of Transportation, and Department of Commerce.

(2638) (vi) Data provided by ports, local facilities, and State or local governments.

(2639) (vii) Data from trade journals and publications.

(2640) (viii) Site visits and inspections.

(2641) (2) Notice of Violation. Once a reporting violation is determined to have occurred, the Chief of the Waterborne Commerce Statistics Center will notify the responsible party and allow 30 days for the reports to be filed after the fact. If the reports are not filed within this 30-day notice period, then appropriate civil or criminal actions will be undertaken by the Army Corps of Engineers, including the proposal of civil or criminal penalties for noncompliance. Typical cases for criminal or civil action include, but are not limited to, those violations which are willful, repeated, or have a substantial impact in the opinion of the Chief of the Waterborne Commerce Statistics Center.

(2642) (3) Administrative Assessment of Civil Penalties. Civil penalties may be assessed in the following manner.

(2643) (i) Authorization. If the Chief of the Waterborne Commerce Statistics Center finds that a person or entity has failed to comply with any of the provisions specified herein, he is authorized to assess a civil penalty in accordance with the Class I penalty provisions of 33 CFR part 326. Provided, however, that the procedures in 33 CFR part 326 specifically implementing the Clean Water Act (33 U.S.C. 1319(g)(4)), public notice, comment period, and state coordination, shall not apply.

(2644) (ii) Initiation. The Chief of the Waterborne Commerce Statistics Center will prepare and process a proposed civil penalty order which shall state the amount of the penalty to be assessed, described by reasonable

specificity the nature of the violation, and indicate the applicable provisions of 33 CFR part 326.

(2645) (iii) Hearing Requests. Recipients of a proposed civil penalty order may file a written request for a hearing or other proceeding. This request shall be as specified in 33 CFR part 326 and shall be addressed to the Director of the Water Resources Support Center, Casey Building, Fort Belvoir, VA 22060-5586, who will provide the requesting person or entity with a reasonable opportunity to present evidence regarding the issuance, modification, or revocation of the proposed order. Thereafter, the Director of the Water Resources Center shall issue a final order.

(2646) (4) Additional Remedies. Appropriate cases may also be referred to the local U.S. Attorney for prosecution, penalty collection, injunctive, and other relief by the Chief of the Waterborne Commerce Statistics Center.

## Part 334–Danger Zones and Restricted Area Regulations

### §334.1 Purpose.

(2647) The purpose of this part is to:

(2648) (a) Prescribe procedures for establishing, amending and disestablishing danger zones and restricted area;

(2649) (b) List the specific danger zones and restricted areas and their boundaries; and

(2650) (c) Prescribe specific requirements, access limitations and controlled activities within the danger zones and restricted areas.

### §334.2 Definitions.

(2651) (a) Danger zone. A defined water area (or areas) used for target practice, bombing, rocket firing or other especially hazardous operations, normally for the armed forces. The danger zones may be closed to the public on a full-time or intermittent basis, as stated in the regulations.

(2652) (b) Restricted area. A defined water area for the purpose of prohibiting or limiting public access to the area. Restricted areas generally provide security for Government property and/or protection to the public from the risks of damage or injury arising from the Government's use of that area.

### §334.3 Special policies.

(2653) (a) General. The general regulatory policies stated in 33 CFR part 320 will be followed as appropriate. In addition, danger zone and restricted area regulations shall provide for public access to the area to the maximum extent practicable.

(2654) (b) Food fishing industry. The authority to prescribe danger zone and restricted area regulations must be exercised so as not to unreasonably interfere with or restrict the food fishing industry. Whenever the proposed establishment of a danger zone or restricted area may affect fishing operations, the District Engineer will consult with the Regional Director, U.S. Fish and Wildlife Service, Department of the Interior and the Regional Director, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA),

(2655) (c) Temporary, occasional or intermittent use. If the use of the water area is desired for a short period of time, not to exceed thirty days in duration, and that planned operations can be conducted safely without imposing unreasonable restrictions on navigation, and without promulgating restricted area regulations in accordance with the regulations in this section, applicants may be informed that formal regulations are not required. Activities of this type shall not reoccur more often than biennially (every other year), unless danger zone/restricted area rules are promulgated under this Part. Proper notices for mariners requesting that vessels avoid the area will be issued by the Agency requesting such use of the water area, or if appropriate, by the District Engineer, to all known interested persons. Copies will also be sent to appropriate State agencies, the Commandant, U.S. Coast Guard, Washington, DC 20590, and Director, National Geospatial-Intelligence Agency, Hydrographic Center, Washington, DC 20390, ATTN: Code NS 12. Notification to all parties and Agencies shall be made at least two weeks prior to the planned event, or earlier, if required for distribution of Local Notice to Mariners by the Coast Guard.

### §334.4 Establishment and amendment procedures.

(2656) (a) Application. Any request for the establishment, amendment or revocation of a danger zone or restricted area must contain sufficient information for the District Engineer to issue a public notice, and as a minimum must contain the following:

(2657) (1) Name, address and telephone number of requestor including the identity of the command and DoD facility and the identity of a point of contact with phone number.

(2658) (2) Name of waterway and if a small tributary, the name of a larger connecting waterbody.

(2659) (3) Name of closest city or town, county/parish and state.

(2660) (4) Location of proposed or existing danger zone or restricted area with a map showing the location, if possible.

(2661) (5) A brief statement of the need for the area, its intended use and detailed description of the times, dates and extent of restriction.

(2662) (b) Public notice. (1) The Corps will normally publish public notices and **Federal Register** documents concurrently. Upon receipt of a request for the establishment, amendment or revocation of a danger zone or restricted area, the District Engineer should forward a copy of the request with his/her recommendation, a copy of the draft public notice and a draft **Federal Register**

document to the Office of the Chief of Engineers, ATTN: CECW-OR. The Chief of Engineers will publish the proposal in the **Federal Register** concurrent with the public notice issued by the District Engineer.

(2663) (2) Content. The public notice and **Federal Register** documents must include sufficient information to give a clear understanding of the proposed action and should include the following items of information:

(2664) (i) Applicable statutory authority or authorities; (40 Stat. 266; 33 U.S.C. 1) and (40 Stat. 892; 33 U.S.C. 3)

(2665) (ii) A reasonable comment period. The public notice should fix a limiting date within which comments will be received, normally a period not less than 30 days after publication of the notice.

(2666) (iii) The address of the District Engineer as the recipient of any comments received.

(2667) (iv) The identity of the applicant/proponent;

(2668) (v) The name or title, address and telephone number of the Corps employee from whom additional information concerning the proposal may be obtained;

(2669) (vi) The location of the proposed activity accompanied by a map of sufficient detail to show the boundaries of the area(s) and its relationship to the surrounding area.

(2670) (3) Distribution. Public notice will be distributed in accordance with 33 CFR 325.3(d)(1). In addition to this general distribution, public notices will be sent to the following Agencies:

(2671) (i) The Federal Aviation Administration (FAA) where the use of airspace is involved.

(2672) (ii) The Commander, Service Force, U.S. Atlantic Fleet, if a proposed action involves a danger zone off the U.S. Atlantic coast.

(2673) (iii) Proposed danger zones on the U.S. Pacific coast must be coordinated with the applicable commands as follows:

(2674) Alaska, Oregon and Washington:

(2675) Commander, Naval Base, Seattle

(2676) California:

(2677) Commander, Naval Base, San Diego

(2678) Hawaii and Trust Territories:

(2679) Commander, Naval Base, Pearl Harbor

(2680) (c) Public hearing. The District Engineer may conduct a public hearing in accordance with 33 CFR part 327.

(2681) (d) Environmental documentation. The District Engineer shall prepare environmental documentation in accordance with appendix B to 33 CFR part 325.

(2682) (e) District Engineer's recommendation. After closure of the comment period, and upon completion of the District Engineer's review he/she shall forward the case through channels to the Office of the Chief of Engineers, ATTN: CECW-OR with a recommendation of whether or not the danger zone or restricted area regulation should be promulgated. The District Engineer shall include a copy of environmental documentation prepared in accordance with appendix B to 33 CFR part 325, the record of any public hearings, if held, a summary of any comments received and a response thereto, and a draft of the regulation as it is to appear in the **Federal Register**.

(2683) (f) Final decision. The Chief of Engineers will notify the District Engineer of the final decision to either approve or disapprove the regulations. The District Engineer will notify the applicant/proponent and publish a public notice of the final decision. Concurrent with issuance of the public notice the Office of the Chief of Engineers will publish the final decision in the **Federal Register** and either withdraw the proposed regulation or issue the final regulation as appropriate. The final rule shall become effective no sooner than 30 days after publication in the Federal Register unless the Chief of Engineers finds that sufficient cause exists and publishes that rationale with the regulations.

### §334.5 Disestablishment of a danger zone.

(2684) (a) Upon receipt of a request from any agency for the disestablishment of a danger zone, the District Engineer shall notify that agency of its responsibility for returning the area to a condition suitable for use by the public. The agency must either certify that it has not used the area for a purpose that requires cleanup or that it has removed all hazardous materials and munitions, before the Corps will disestablish the area. The agency will remain responsible for the enforcement of the danger zone regulations to prevent unauthorized entry into the area until the area is deemed safe for use by the public and the area is disestablished by the Corps.

(2685) (b) Upon receipt of the certification required in paragraph (a) of this section, the District shall forward the request for disestablishment of the danger zone through channels to CECW-OR, with its recommendations. Notice of proposed rulemaking and public procedures as outlined in §334.4 are not normally required before publication of the final rule revoking a restricted area or danger zone regulation. The disestablishment/revocation of the danger zone or restricted area regulation removes a restriction on a waterway.

### §334.6 Datum.

(2686) (a) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose reference horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

(2687) (b) For further information on NAD 83 and National Service nautical charts please contact:

(2688) Director, Coast Survey (N/CG2)

(2689) National Ocean Service, NOAA

(2690) 1315 East-West Highway, Station 6147

(2691) Silver Spring, MD 20910-3282.

**§334.290 Elizabeth River, Southern Branch, Va., naval restricted areas**

(2692) (a) The areas–(1) St. Helena Annex Area. Beginning at a point at St. Helena Annex of the Norfolk Naval Shipyard, on the eastern shore of Southern Branch of Elizabeth River, at latitude 36°49'43", longitude 76°17'26.5"; thence in a southwesterly direction to a point on the eastern boundary of Norfolk Harbor 40-foot channel at latitude 36°49'42", longitude 76°17'33"; thence in a southerly direction along the eastern boundary of Norfolk Harbor 40-foot channel to latitude 36°49'28", longitude 76°17'27"; thence easterly to the shore at latitude 36°49'28", longitude 76°17'22"; and thence, northerly along the shore to the point of beginning.

(2693) (2) Norfolk Naval Shipyard Area. Beginning at a point on the shore at the northeast corner of the Norfolk Naval Shipyard, at latitude 36°49'43.5", longitude 76°17'41.5"; thence due east approximately 100 feet to the western boundary of Elizabeth River channel; thence in a southerly direction along the western boundary of the channel to the point where it passes through the draw of the Norfolk and Portsmouth Belt Line Railroad bridge, thence in a southwesterly direction along the northerly side of the bridge to the western shore of Southern Branch of Elizabeth River; and thence along the shore in a northerly direction to the point of beginning.

(2694) (3) Southgate Terminal Area. Beginning at a point at the northeast corner of Southgate Terminal Annex of Norfolk Naval Shipyard, at

(2695) 36°48'23", 76°17'39"; thence east to

(2696) 36°48'23", 76°17'29"; thence southerly along the western boundary of Norfolk Harbor 35-foot channel to

(2697) 36°48'04", 76°17'33"; thence west to

(2698) 36°48'04", 76°17'41"; and thence along the shore in a northerly direction to the point of beginning.

(2699) (b) The regulations. (1) No vessels other than Naval vessels and other vessels authorized to move to and from piers at the Norfolk Naval Shipyard and its two annexes described in paragraph (a) (1) and (3) of this section, and no person other than persons embarked in such vessels, shall enter the restricted areas.

(2700) (2) This section shall be enforced by the Commander, Norfolk Naval Shipyard, Portsmouth, Va. and such agencies as he may designate.

**§334.320 Chesapeake Bay entrance; naval restricted area.**

(2701) (a) The area. Beginning at a point on the south shore of Chesapeake Bay at longitude 76°03'06"; thence to

(2702) 37°01'18", 76°02'06"; thence to

(2703) 37°00'18", 75°55'54"; thence to

(2704) 36°58'00", 75°48'24"; thence to

(2705) 36°51'48", 75°51'00"; thence to the shore at longitude 75°58'48", and thence northwesterly and southwesterly along the shore at Cape Henry to the point of beginning.

(2706) (b) The regulations. (1) Anchoring, trawling, crabbing, fishing, and dragging in the area are prohibited, and no object attached to a vessel or otherwise shall be placed on or near the bottom.

(2707) (2) This section shall be enforced by the Commandant, Fifth Naval District, Norfolk, Va.

**§334.380 Atlantic Ocean south of entrance to Chesapeake Bay off Dam Neck, Virginia Beach, Virginia, naval firing range.**

(2708) (a) The danger zone. All of the water within a sector extending seaward a distance of 7,500 yards between radial lines bearing **035°** true and **092°** true, respectively, from a point on the shore at latitude 36°47'33"N, longitude 75°58'23"W.

(2709) (b) The regulations. (1) Vessels shall proceed through the area with caution and shall remain therein no longer than necessary for purpose of transit.

(2710) (2) When firing is in progress during daylight hours, red flags will be displayed at conspicuous locations on the beach. When firing is in progress during periods of darkness, red flashing lights will be displayed from conspicuous locations which are visible from the water a minimum distance of four (4) nautical miles.

(2711) (3) Firing on the ranges will be suspended as long as any vessel is within the danger zone.

(2712) (4) Lookout posts shall be manned by the activity or agency operating the firing range at Fleet Combat Center. After darkness, night vision systems will be utilized by lookouts to aid in locating vessels transiting the area.

(2713) (5) There shall be no firing on any ranges during the periods of low visibility which would prevent the recognition of a vessel (to a distance of 7,500 yards) which is properly displaying navigational lights, or which would preclude a vessel from observing the red range flags or lights.

(2714) (6) The regulations in this section shall be enforced by the Commanding Officer, Fleet Combat Training Center, Atlantic, Dam Neck, Virginia Beach, Virginia, and other such agencies as he/she may designate.

**§334.390 Atlantic Ocean south of entrance to Chesapeake Bay; firing range.**

(2715) (a) The danger zone. A sector extending seaward for a distance of 12,000 yards between two radial lines bearing 030° True and 083° True, respectively, from a point on the shore at 36°46'48"N., 75°57'24"W.; and an adjacent sector extending seaward for a distance of 15 nautical miles between two radial lines bearing 083° True and 150° True, respectively, from the same shore position.

(2716) (b) The regulations. (1) Vessels shall proceed through the area with caution and shall remain therein no longer than necessary for purposes of transit.

(2717) (2) When firing is in progress during daylight hours, red flags will be displayed at conspicuous locations on the beach. When firing is in progress during periods of darkness, red flashing lights will be displayed

from conspicuous locations on the beach which are visible from the water a minimum distance of four (4) nautical miles.

(2718) (3) Firing on the ranges will be suspended as long as any vessel is within the danger zone.

(2719) (4) Lookout posts will be manned by the activity or agency operating the firing range at the Fleet Combat Center, Atlantic, Dam Neck, Virginia Beach, Virginia. After darkness, night vision systems will be utilized by lookouts to aid in locating vessels transiting the area.

(2720) (5) There shall be no firing on the range during periods of low visibility which would prevent the recognition of a vessel (to a distance of 7,500 yards) which is properly displaying navigation lights, or which would preclude a vessel from observing the red range flags or lights.

(2721) (6) The regulations in this section shall be enforced by the Commander, Naval Air Force, U.S. Atlantic Fleet/ Commander, Fleet Air Norfolk, Norfolk, Va., and such agencies as he may designate.

### §334.400 Atlantic Ocean south of entrance to Chesapeake Bay off Camp Pendleton, Virginia; naval restricted area.

(2722) (a) The area. Beginning at a point on the shore at Camp Pendleton at

(2723) 36°48'19"N, 75°57'49"W; thence easterly 200 yards to

(2724) 36°48'20"N, 75°57'42"W; thence northerly 400 yards to

(2725) 36°48'32"N, 75°57'45"W: thence westerly 200 yards to

(2726) 36°48'31"N, 75°57'53"W; and thence southerly 400 yards along the shore to the point of beginning.

(2727) (b) The regulations. (1) Persons or vessels, other than those vessels owned and operated by the United States shall not enter the area except by permission of the Commanding Officer, U.S. Naval Amphibious Base, Little Creek, Norfolk, Virginia.

(2728) (2) This section shall be enforced by the Commanding Officer, U.S. Naval Amphibious Base, Little Creek, Norfolk, Virginia, and such agencies as he may designate.

### §334.410 Albemarle Sound, Pamlico Sound, and adjacent waters, N.C.; danger zones for naval aircraft operations.

(2729) (a) Target areas–(1) North Landing River (Currituck Sound). The waters of North Landing River within a radius of 1,000 yards from a target located at latitude 36°31'00", longitude 76°01'40".

(2730) (2) Northern part of Currituck Sound. Beginning at a point bearing **65°30'**, 1,025 yards, from Currituck Sound Light 69; thence **86°**, 6,000 yards; thence **193°**, 4,425 yards; thence **267°30'**, 2,775 yards; and thence to the point of beginning. The target is located at latitude 36°27'16", longitude 75°56'30".

(2731) Note: All bearings in this section are referred to true meridian.

(2732) (b) Target and bombing area along south shore of Albemarle Sound. The area. Beginning at

(2733) 36°00'43", 76°19'20"; thence to

(2734) 36°02'40", 76°04'26", thence to

(2735) 36°00'12", 76°04'26"; thence to

(2736) 35°59'35", 76°19'20", and thence to the point of beginning. This area is divided into three subareas A, B, and C as follows: Area A, beginning at

(2737) 36°00'43", 76°19'20"; thence to

(2738) 36°01'20", 76°14'30"; thence to

(2739) 35°59'45", 76°14'30"; thence to

(2740) 35°59'35", 76°19'20", and thence to the point of beginning. Area B, beginning at

(2741) 36°01'20", 76°14' 30"; thence to

(2742) 36°02'18", 76°07'15"; thence to

(2743) 36°00'05", 76°07'15"; thence to

(2744) 35°59'45", 76°14'30"; and thence to the point of beginning. Area C, beginning at

(2745) 36°02'18", 76°07'15"; thence to

(2746) 36°02'40", 76°04'26"; thence to

(2747) 36°00'12", 76°04'26"; thence to

(2748) 36°00'05", 76°07'15"; and thence to the point of beginning.

(2749) (c) Naval Aviation Ordnance test area in Pamlico Sound in vicinity of Long Shoal. A circular area with radius of one and one-half miles having its center at latitude 35°32'18", longitude 75°40'39".

(2750) (d) The regulations–(1) Target areas. The area described in paragraph (1)(a) of this section will be used as a dive bombing target by naval aircraft. In peacetime, munitions will be limited to miniature bombs which contain only small explosive charges for producing smoke puffs to mark points of impact. All operations will be conducted during daylight hours, and the area will be open to navigate at night. No persons or vessels shall enter this area during the hours of daylight without special permission from the enforcing agency. The area will be patrolled and vessels will be warned not to enter. "Buzzing" by plane will warn vessels that they are in a danger zone, and upon being so warned vessels which have inadvertently entered the area shall immediately leave the area.

(2751) (2) Target and bombing area. The area described in paragraph (b) of this section will be used as a target and bombing area for both day and night operations. Dummy ammunition, waterfilled or smoke bombs and inert rockets will be used, except during wartime when live ammunition, bombs and rockets may be used. The area will be open to navigation except for periods when ordnance exercises are being conducted by naval aircraft. In area B described in paragraph (b) of the section the placing of nets, traps, buoys, pots, fishponds, stakes, or other equipment which may interfere with target vessels operating in the area shall not be permitted. The area will be patrolled and persons and vessels shall clear the area under patrol upon being warned by the surface

patrol craft or when "buzzed" by patrolling aircraft. As a further means of warning vessels of naval aircraft operations in the area described in paragraph (b) of this section, a cluster of flashing red lights at night and a large red flag by day will be displayed from the range observation tower located in the approximate center of the shore side of this area.

(2752) (3) Naval Aviation Ordnance test area. The area described in paragraph (c) of this section shall be closed to persons and navigation except for such military personnel and vessels as may be directed by the enforcing agency to enter on assigned duties.

(2753) (4) Enforcing agency. The regulations in this section shall be enforced by the Commander, Naval Air Force, U.S. Atlantic Fleet, and such agencies as he/she shall designate.

**§334.412 Albermarle Sound, Pamlico Sound, Harvey Point and adjacent waters, NC; restricted area.**

(2754) (a) The area. Beginning on the north shore of Albemarle Sound and the easternmost tip of Harvey Point; thence southeasterly to Daybeacon 3; thence southeasterly to

(2755) 36°03'06"N., 76°16'43"W.; thence southwesterly to

(2756) 36°02'18"N., 76°19'30"W.; thence northwesterly to

(2757) 36°04'18"N., 76°20'20"W.; thence 23°5' True to the shore; and thence northeasterly along the shore to the point of beginning.

(2758) (b) The regulations. The restricted area described in this section is the inactive Harvey Point target range which was disestablished as a danger zone. The area will be open to public access for recreational and commercial uses, except that dredging, clamming, crabbing, seining, and anchoring of all vessels and any other activity which could result in disturbing or penetrating the bottom is prohibited.

(2759) (c) Enforcing agency. The regulations in this section shall be enforced by the Commander, Naval Air Force, U.S. Atlantic Fleet, and such agencies as he/she shall designate.

**§334.420 Pamlico Sound and adjacent waters, N.C.; danger zones for Marine Corps operations.**

(2760) (a) Bombing and rocket firing area in Pamilico Sound in vicinity of Brant Island–(1) The area. The waters within a circular area with a radius of 3.0 statute miles having its center on the southern side of Brant Island at latitude 35°12'30", longitude 76°26'30".

(2761) (2) The regulations. The area shall be closed to navigation and personnel at all times except for vessels engaged in operational and maintenance work as directed by the enforcing agency. Prior to bombing or firing operations the area will be "buzzed" by plane. Upon being so warned vessels working in the area shall leave the area immediately.

(2762) (b) Bombing, rocket firing, and strafing areas in Pamlico Sound and Neuse River–(1) The areas. (i) The waters within a circular area with a radius of 1.8 statute miles having its center at

(2763) 35°02'12"N., 76°28'00"W.

(2764) (ii) The waters within a circular area with a radius of 0.5 statute mile having its center at

(2765) 35°04'12"N., 76°28'24"W.

(2766) (iii) The waters within a circular area with a radius of 0.5 statute mile having its center at

(2767) 35°01'42"N., 76°25'48"W.

(2768) (iv) The waters within a circular area with a radius of 0.5 statute mile having its center at

(2769) 34°58'48"N., 76°26'12"W.

(2770) (v) The waters within a circular band with an inner radius of 1.8 statute miles and an outer radius of 2.5 statute miles having its center at 35°02'12"N., 76°28'00"W.

(2771) (2) The regulations. (i) The area described in paragraph (b)(1) of this section will be used as bombing, rocket firing, and strafing areas. Live and dummy ammunition will be used. The area shall be closed to navigation and all persons at all times except for such vessels as may be directed by the enforcing agency to enter on assigned duties. The area will be patrolled and vessels "buzzed" by the patrol plane prior to the conduct of operations in the area. Vessels or personnel which have inadvertently entered the danger zone shall leave the area immediately upon being so warned.

(2772) (ii) The areas described in paragraphs (b)(1)(ii), (iii) and (iv) of this section shall be used for bombing, rocket firing, and strafing areas. Practice and dummy ammunition will be used. All operations will be conducted during daylight hours, and the areas will be open to navigation at night. No vessel or person shall enter these areas during the hours of daylight without special permission from the enforcing agency. The areas will be patrolled and vessels "buzzed" by the patrol plane prior to the conduct of operations in the areas. Vessels or personnel which have inadvertently entered the danger zones shall have leave the area immediately upon being warned.

(2773) (iii) The areas described in paragraph (b)(1)(v) of this section shall be used as a strafing area. Practice and dummy ammunition will be used. Operations will be conducted on five consecutive days (Monday through Friday) per month during the months of February through November between the hours of 4 p.m. to 11 p.m. The block training dates will be scheduled two weeks in advance of the actual training start date. Marine Corps Air Station Cherry Point will have a call-in number for public use to provide information on the current use of the training area. The Notification to Mariners System will also be utilized to inform the public on the status of the training area. No vessel or person shall enter the area during the scheduled block training session except for such vessels as may be directed by the enforcing agency to enter on assigned duties. The area will be patrolled and vessels "buzzed" by the patrol plane prior to the conduct of operations in the area. Vessels or personnel which have inadvertently entered the danger

zone shall leave the area immediately upon being so warned.

**§334.430 Neuse River and tributaries at Marine Corps Air Station Cherry Point, North Carolina; restricted area and danger zone.**

(2774) (a) The restricted area. That portion of Neuse River within 500 feet of the shore along the reservation of the Marine Corps Air Station, Cherry Point, North Carolina, extending from the mouth of Hancock Creek to a point approximately 6,800 feet west of the mouth of Slocum Creek, and all waters of Hancock and Slocum Creeks and their tributaries within the boundaries of the reservation.

(2775) (b) The danger zone. The waters within an area beginning at

(2776) 34°55'24.3"N., 76°51'11.6"W.; thence northeasterly across Hancock Creek to

(2777) 34°55'30.9"N., 76°50'59.5"W.; continuing northeasterly to

(2778) 34°56'00.2"N., 76°50'06.3"W.; thence northwesterly to the Neuse River shoreline at

(2779) 34°56'13.1"N., 76°50'28.3"W.; continuing northwesterly to

(2780) 34°56'35.8"N., 76°51'07.8"W.; thence southwesterly along the shorelines to

(2781) 34°56'06.4"N., 76°51'32.7".; thence southeasterly along Hancock Creek shoreline to the point of origin.

(2782) (c) The regulations. (1) Except in cases of extreme emergency, all persons or vessels, other than those operated by the United States Navy or United States Coast Guard, are prohibited from entering the restricted area without prior permission of the enforcing agency.

(2783) (2) Entry points into the danger zone will be prominently marked with signage indicating the boundary of the danger zone.

(2784) (3) Firing will take place both day and night at irregular periods throughout the year. Appropriate warnings will be issued through official government and civilian channels servicing the region. Such warnings will specify the time and duration of operations and give such other pertinent information as may be required in the interest of safety. Upon completion of firing or if the schedules firing is cancelled for any reason, the warning signals marking the danger zone will be removed.

(2785) (4) Except as otherwise provided in this section the danger zone will be open to general public access. Vessels, watercraft, and other vehicles may proceed through the danger zone.

(2786) (5) The regulation in this section shall be enforced by the Commanding Officer, Marine Corps Air Station Cherry Point, North Carolina, and/or persons or agencies as he/she may designate.

**§334.440 New River, N.C., and vicinity; Marine Corps Firing Ranges.**

(2787) (a) Atlantic Ocean east of New River Inlet. The waters of the Atlantic Ocean within a sector bounded on the north by a line bearing 105° from

(2788) 34°37'25"N., 77°10'35"W.; on the east and south by the arc of a circle having a radius of 25,000 yards centered at

(2789) 34°34'15"N., 77°16'10"W.; on the west by a line bearing 205° from

(2790) 34°32'37"N., 77°18'34"W., and on the northwest by the shore.

(2791) Note: All bearings in this section are referred to true meridian.

(2792) (b) New River. The firing ranges include all waters to the high waterline within eight sections described as follows:

(2793) (1) Trap Bay Sector. Bounded on the south by a line running from Cedar Point 280° to New River Light 70, thence 254° to Hatch Point; and on the northwest by a line running from Wilkins Bluff 232° to Hall Point.

(2794) (2) Courthouse Bay Sector. Bounded on the southeast by the northwest boundary of the Traps Bay Sector and on the west by Sneads Ferry Bridge.

(2795) (3) Stone Bay Sector. Bounded on the east by Sneads Ferry Bridge and on the north by a line running from a point on the east side of New River opposite the head of Sneads Creek 291°30' to the south side of the mouth of Stone Creek.

(2796) (4) Stone Creek Sector. The northwest portion of Stone Bay, bounded on the south by the north boundary of the Stone Bay Sector; and on the east by longitude 77°26'.

(2797) (5) Grey Point Sector. Bounded on the south by the north boundary of the Stone Bay Sector; on the west by the east boundary of the Stone Creek Sector; and on the northeast by a line running from Town Point 113° to the south side of the mouth of French Creek.

(2798) (6) Farnell Bay Sector. Bounded on the south by the northeast boundary of the Grey Point Sector, including French Creek up to longitude 77°20'; and on the north by a line running from Hadnot Point 285°30' to Holmes Point.

(2799) (7) Morgan Bay Sector. Bounded on the south by the north boundary of the Farnell Bay Sector, including Wallace Creek up to longitude 77°22'; and on the northwest by a line running from Paradise Point 243°30' to Ragged Point.

(2800) (8) Jacksonville Sector. Bounded on the southeast by the northwest boundary of the Morgan Bay Sector, including Southwest Creek up to the point where it narrows to 200 feet in width, and Northeast Creek up to longitude 77°23'30"; and on the north by an east-west line passing through New River Day Beacon 41.

(2801) (c) The regulations. (1) No person shall enter or remain in the water in any closed section after notice of firing therein has been given. Sailing vessels and any water-craft having a speed of less than 5 knots shall

keep clear of any closed sector at all times after notice of firing therein has been given. Vessels propelled by mechanical power at a speed greater than 5 knots may enter the sectors without restriction except when the firing signals are being displayed. When these signals are displayed, vessels shall clear the closed sectors immediately and no vessels shall enter such sectors until the signals indicate that firing has ceased.

(2802) (2) Firing will take place both day and night at irregular periods throughout the year. Insofar as training requirements will permit, underwater explosions will be restricted in the Atlantic Ocean sector (described in paragraph (a) of this section) during the periods May 1 and June 5, inclusive, and November 22 to December 15, inclusive.

(2803) (3) Two days in advance of the day when firing in any sector except the Stone Creek sector is scheduled to begin, the enforcing agency will warn the public of the contemplated firing, stating the sector or sectors to be closed, through the public press and the United States Coast Guard and, in the case of the Atlantic Ocean sector, the Cape Fear Pilots Association at Southport, and the Pilots Association at Morehead City, North Carolina. The Stone Creek sector may be closed without advance notice.

(2804) (4) Towers at least 50 feet in height will be erected near the shore at the northeast and southwest limits of the Atlantic Ocean sector, and towers at least 25 feet in height will be erected near the easterly shore at the upper and lower limits of each New River sector. On days when firing is to take place a red flag will be displayed on each of the towers marking the sector or sectors to be closed. These flags will be displayed by 8:00 a.m., and will be removed when firing ceases for the day. Suitable range markers will be erected indicating the bearings of the north and west limits of the Atlantic Ocean sector.

(2805) (5) During the night firing, red lights will be displayed on the towers; and, in the case of the Atlantic Ocean sector, searchlights will be employed as barrier lights to enable safety observers to detect vessels which may attempt to enter the danger zone.

(2806) (6) No person shall enter or remain within a 2-acre area surrounding a waterborne refueling training operation, in either the Grey Point Sector, Farnell Bay Sector, or Morgan Bay Sector as described in paragraph (b) of this section, for the duration of the training operation after a notice to conduct a waterborne refueling training operation has been published in the local notice to mariners and has been broadcast over the Marine Band radio network. The 2-acre area surrounding a waterborne refueling training operation will be patrolled and persons and vessels shall clear the area under patrol upon being warned by the surface patrol craft.

(2807) (d) Target and bombing area in Atlantic Ocean in vicinity of Bear Inlet–(1) The water within an area described as follows: Beginning at

(2808) 34°37'32"N., 77°12'03"W.; thence to

(2809) 34°36'58"N., 77°11'25"W.; thence to

(2810) 34°37'44"N., 77°10'35"W.; thence to

(2811) 34°32'27"N., 77°06'30"W.; thence to

(2812) 34°28'55"N., 77°15'05"W.; thence to

(2813) 34°34'50"N., 77°15'10"W.; thence to the point of beginning.

(2814) (2) The regulations. Vessels may proceed along established waterways except during military training periods. Warning of military training periods will be given through Notices to Mariners and by displaying one hour prior to commencement a red danger streamer during daylight hours or a red light at night, from a flag pole 40 feet in height located at the U.S. Coast Guard Life Boat Station, Bogue Inlet, Swansboro, North Carolina, and from observation tower 40 feet in height located at the northern end of Onslow (Hurst) Beach. Prior to bombing and firing operations, the area will be searched by plane. Watercraft in the area will be warned by aircraft "buzzing" of the impending target practice. Upon being so warned, all persons and vessels shall leave the area as quickly as possible by the most direct route.

(2815) (e) Inland waters in the Browns Inlet area between Bear Creek and Onslow Beach Bridge over the Atlantic Intracoastal Waterway–(1) The area. Navigable waters between Bear Creek and Onslow Beach Bridge to include all inlets, streams, bays, and water therein contained, bounded on the north by Bear Creek, on the east and south by the Atlantic Ocean, to the meridian 77°16'20"; thence by this meridian to latitude 34°34'31"; and thence by a line bearing 44° from this point until the line intersects Bear Creek.

(2816) (2) The regulations. (i) No person shall enter or remain in the waters of this area due the possibility of unexploded projectiles.

(2817) (ii) Vessels may proceed through the Atlantic Intracoastal Waterway in the area without stopping except in cases of extreme emergencies.

(2818) (iii) All navigable waters in the area between the south bank of Bear Creek and the north bank of the north connecting channel between the Atlantic Intracoastal Waterway and Browns Inlet shall be closed to navigation at all times. There are highly sensitive unexploded projectiles within the limits of this area.

(2819) (iv) Vessels may proceed through the north connecting channel and the south connecting channel (Banks Channel) in the area between the Atlantic Intracoastal Waterway and Browns Inlet to the Atlantic Ocean without stopping during periods of nonmilitary use. Caution should be used when proceeding through these waters due to the presence of unexplored projectiles lying in this area.

(2820) (v) Navigable waters in the area between the south connecting channel (Banks Channel) leading to Browns Inlet and Onslow Beach Bridge on both sides of the Atlantic Intracoastal Waterway are open to unrestricted navigation during periods of nonmilitary use. An unknown element of risk exists in this area due to the possible presence of unexploded projectiles.

(2821) (vi) Warning of impending military use of the area will be contained in weekly Notice to Mariners.

(2822) (vii) Vessels having specific authority from the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina, may enter the area.

(2823) (f) Enforcing agency. The regulations of this section shall be enforced by the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina, or his authorized representatives.

**§334.450 Cape Fear River and tributaries at Sunny Point Army Terminal, Brunswick County, North Carolina; restricted area.**

(2824) (a) The area. That portion of Cape Fear River due west of the main ship channel extending from U.S. Coast Guard buoy No. 35 (34°02'03.218"N., 77°56'28.755"W.) at the north approach channel to Sunny Point Army Terminal to U.S. Coast Guard buoy No. 27 (33°58'16.12"N., 77°56'59.736"W.) at the south approach channel to Sunny Point Army Terminal and all waters of its tributaries therein.

(2825) (b) Except in cases of extreme emergency, all persons or vessels of any size or rafts other than those authorized by the Commander, Sunny Point Army Terminal, are prohibited from entering this area without prior permission of the enforcing agency.

(2826) (c) The regulations in this section shall be enforced by the Commander, Sunny Point Army Terminal, Southport, North Carolina, and such agencies as he may designate.

**§334.460 Cooper River and tributaries at Charleston, SC.**

(2827) (a) The areas:

(2828) (1) That portion of the Cooper River beginning on the west shore at

(2829) 32°52'37"N., 79°58'06"W.; thence to

(2830) 32°52'37"N., 79°58'03"W.; thence to

(2831) 32°52'27"N., 79°68'01"W.; thence to

(2832) 32°52'06"N., 79°57'54"W.; at the west channel edge, thence to

(2833) 32°51'48.5"N., 79°57'41.5"W.; thence to

(2834) 32°51'33"N., 79°57'27"W.; thence to

(2835) 32°51'19"N., 79°57'05"W.; thence to

(2836) 32°51'01"N., 79°56'07"W.; thence to

(2837) 32°50'50"N., 79°56'02"W.; thence to

(2838) 32°50'48"N., 79°56'07"W.; on the west shore, thence north along the shoreline including the reach of Noisett Creek to the eastern boundary of the Navy Base to the beginning point at the west shore at

(2839) 32°52'37"N., 79°58'06"W.

(2840) (2) The reach of Shipyard Creek upstream from a line 300 feet from and parallel to the upstream limit of the Improved Federal Turning Basin.

(2841) (3) That portion of the interior Shipyard Creek commencing at 32°49'50"N., 79°56'10"W., being a point at the southern tip of the shoreline where the northern shore of Shipyard Creek joins the Cooper River, thence going along the northern shore of Shipyard Creek to the southern portion of the existing restricted area in paragraph (a)(2) of this section; thence along said line being 300 feet from and parallel to the upstream limit of the Improved Federal Turning Basin for a distance of 15 feet, thence to the most northerly point of the Improved Federal Turning Basin, thence along the northeastern edge for the Improved Turning Basin to the northeast edge of the main channel of Shipyard Creek to a point lying in the mouth of Shipyard Creek where it reaches the Cooper River at the northeast edge of the main channel of the Shipyard Creek and 79°56'10"W., thence to the beginning point at 32°49'50"N., 79°56'10"W.

(2842) (4) That portion of the Cooper River surrounding Pier Yankee beginning at a point on the west shore of the Cooper River at

(2843) 32°50'00"N., 79°56'10.5"W.; thence to

(2844) 32°50'00"N., 79°55'55"W.; thence to

(2845) 32°49'54"N., 79°55'55"W.; thence to

(2846) 32°49'50"N., 79°56'10"W.; thence north along the shore to the beginning point at the west shore of the Cooper River at

(2847) 32°50'00"N., 79°56'10.5"W.

(2848) (5) That portion of the Cooper River beginning on the west channel edge at

(2849) 32°52'06"N., 79°57'54"W.; thence to the east shore at

(2850) 32°52'13"N., 79°57'30"W.; thence along the eastern shore to

(2851) 32°51'30"N., 79°56'15.5"W.; thence to

(2852) 32°51'01"N., 79°55'50"W.; thence to

(2853) 32°50'52"N., 79°56'03.5"W.; thence to

(2854) 32°51'01"N., 79°56'07"W.; thence to

(2855) 32°51'19"N., 79°57'05"W.; thence to

(2856) 32°51'33"N., 79°57'27"W.; thence to

(2857) 32°51'48.5"N., 79°57'41.5"W.; thence to the beginning point at the west channel edge at

(2858) 32°52'06"N., 79°57'54"W.

(2859) (6) That portion of the Cooper River beginning on the west shore at

(2860) 32°50'48"N., 79°56'07"W.; thence to

(2861) 32°50'50"N., 79°56'02"W.; thence to

(2862) 32°50'32"N., 79°55'55"W.; thence to

(2863) 32°50'00"N., 79°55'55"W.; thence to

(2864) 32°50'00"N., 79°56'10.5"W.; on the west shore, thence along the shoreline to the beginning point on the west shore at

(2865) 32°50'48"N., 79°56'07"W.

(2866) (7) That portion of Goose Creek beginning at a point on the west shore of Goose Creek at its intersection with the Cooper River at

(2867) 32°54'32"N., 79°57'04"W.; thence proceeding along the western shoreline of Goose Creek for approximately 6.9 miles to its intersection with the Seaboard Coastline Railroad at

(2868) 32°55'34"N., 79°59'30"W.; thence in a northwesterly direction along the Seaboard Coastline Railroad to

(2869) 32°55'37"N., 79°59'32"W.; thence proceeding along the eastern shoreline of Goose Creek in a southeasterly direction to

(2870) 32°54'33"N., 79°56'59"W.; thence back to

(2871) 32°54'32"N., 79°57'04"W.

(2872) (8) That portion of the Cooper River, extending from the mouth of Goose Creek, to a point approximately five-hundred (500) yards north of Red Bank Landing, a distance of approximately 4.8 miles and, the tributaries to the Cooper River within the area enclosed by the following arcs and their intersections:

(2873) (i) Radius=8,255' center of radius,

(2874) 32°55'45"N., 79°45'23"W.

(2875) (ii) Radius=3,790' center of radius,

(2876) 32°55'00"N., 79°55'41"W.

(2877) (iii) Radius=8,255' center of radius,

(2878) 32°55'41"N., 79°56'15"W.

(2879) (iv) Radius=8,255' center of radius,

(2880) 32°56'09"N., 79°56'19"W.

(2881) (9) That portion of the Cooper River beginning on the western shoreline at

(2882) 32°54'37"N., 79°57'01"W.; thence proceeding along the western shoreline in a northerly direction for approximately 4.8 miles to

(2883) 32°57'32"N., 79°55'27"W.; thence in a southerly direction for approximately 100 yards to

(2884) 32°57'29"N., 79°55'23"W., thence in a southwesterly direction, paralleling the shoreline to

(2885) 32°56'48"N., 79°55'48"W.; thence in an easterly direction for approximately 50 yards to

(2886) 32°56'49"N., 79°55'46"W., thence in a southerly direction, paralleling the shoreline, to

(2887) 32°56'40"N., 79°55'40"W.; thence in a westerly direction for approximately 50 yards to

(2888) 32°56'39"N., 79°55'42"W.; thence in a southwesterly direction, paralleling the shoreline, to

(2889) 32°56'15"N., 79°56'07"W.; thence in a southwesterly direction to

(2890) 32°56'05"N., 79°56'17"W.; thence in a westerly direction, for approximately 50 yards to

(2891) 32°56'05"N., 79°56'19"W.; thence in a southerly direction, paralleling the shoreline to

(2892) 32°55'45"N., 79°56'19"W.; thence in a southwesterly direction to

(2893) 32°55'42"N., 79°56'13"W.; thence in a southeasterly direction, parallel the shoreline, to

(2894) 32°55'18"N., 79°55'55"W.; thence in a southwesterly direction to

(2895) 32°55'16"N., 79°56'00"W.; thence in a southwesterly direction paralleling the shoreline to

(2896) 32°54'35"N., 79°56'57"W., thence back to

(2897) 32°54'37"W., 79°57'01"W.

(2898) (10) That portion of the Cooper River beginning at a point near the center of the Cooper River at

(2899) 32°55'03"N., 79°55'42"W.; thence easterly to

(2900) 32°55'03"N., 79°55'35"W.; thence southerly to

(2901) 32°54'52"N., 79°55'33"W.; thence westerly to

(2902) 32°54'53"N., 79°55'42"W.; thence northerly to

(2903) 32°55'03"N., 79°55'42"W.

(2904) (11) That portion of Foster Creek beginning at a point on the southern shoreline of Foster Creek at its intersection with Back River at

(2905) 32°58'30"N., 79°56'33"W.; thence proceeding along the southern shoreline to the terminus of Foster Creek; thence back down its northern shoreline of Foster Creek

(2906) 32°58'34"N., 79°56'34"W.; thence back to

(2907) 32°58'30"N., 79°56'33"W.

(2908) (12) Danger zone. That portion of Foster Creek beginning at the point of the southern shoreline of an unnamed tributary of Foster Creek at its intersection with Foster Creek at 32°59'16"N., 79°57'23"W.; thence back proceeding along the eastern shoreline to the terminus of the tributary at 32°59'49"N., 79°57'29"W.; thence back down the western shoreline of the unnamed tributary to 32°59'15"N., 79°57'26"W. The waters and associated marshes in this danger zone area are subject to impact by rounds and ricochets originating from a small arms range when firing is in progress.

(2909) (13) Danger Zone. Those portions of unnamed tributaries and associated marshes of Back River and Foster Creek that are generally described as lying south of the main shoreline and extending southward to the northern shoreline of Big Island (U.S. Naval Reservation). Specifically, the area beginning at a point on the main shoreline which is the northern shore of an unnamed tributary of Back River at 32°59'19"N., 79°56'52"W., southwesterly to a point on or near the northern shoreline of Big Island at 32°59'11"N., 79°56'59"W.; thence northwesterly to a point on the main shoreline, which is the northern shore of an unnamed tributary of Foster Creek, at 32°59'16"N., 79°57'11"W.; thence easterly along the main shoreline, which is the northern shore of the unnamed tributaries of Foster Creek and Back River, back to the point of beginning at 32°59'19"N., 79°56'52"W. The waters and associated marshes in this danger zone area are subject to impact by rounds and ricochets originating from a small arms range when firing is in progress.

(2910) (b) The regulations:

(2911) (1) Unauthorized personnel, vessels and other watercraft shall not enter the restricted areas described in paragraphs (a)(1), (a)(2), and (a)(4) of this section at any time.

(2912) (2) Personnel, vessels and other watercraft entering the restricted area described in paragraph (a)(5) of this section, shall proceed at normal speed and under no circumstances anchor, fish, loiter, or photograph until clear of the restricted area.

(2913) (3) Personnel, vessels and other watercraft may be restricted from using any or all of the area described in paragraphs (a)(3) and (a)(6) of this section without first obtaining an escort or other approval from Commander, Naval Base, Charleston, when deemed necessary and appropriately noticed by him/her for security purposes or other military operations.

(2914) (4) Personnel, vessels and other watercraft, other than those specifically authorized by Commanding Officer, U.S. Naval Weapons Station, Charleston, SC, entering the restricted area described in paragraph (a)(8) of this section shall proceed at normal speed, and under no circumstances anchor, fish, loiter, or photograph in any way until clear of the restricted area.

(2915) (5) Personnel, vessels and other watercraft, other than those specifically authorized by Commanding Officer, U.S. Naval Weapons Station, Charleston, SC, entering the areas described in paragraphs (a)(9) and (a)(10) of this section are prohibited from entering within one-hundred (100) yards of the west bank of the Cooper River, in those portions devoid of any vessels or man-made structures. In those areas where vessels or man-made structures are present, the restricted area will be 100 yards from the shoreline or 50 yards beyond those vessels or other man-made structures, whichever is the greater. This includes the area in paragraph (a)(10) of this section.

(2916) (6) In the interest of National Security, Commanding Officer, U.S. Naval Weapons Station, Charleston, SC, may at his/her discretion, restrict passage of persons, watercraft and vessels in the areas described in paragraphs (a)(7), (a)(8) and (a)(11) of this section until such time as he/she determines such restriction may be terminated.

(2917) (7) All restricted areas and all danger zones and the approaches leading to the danger zones will be marked with suitable warning signs.

(2918) (8) The regulations described in paragraphs (b)(1), (2) and (3) of this section shall be enforced by Commander, Naval Base, Charleston, and such agencies as he/she may designate.

(2919) (9) The regulations in this section for the danger zones described in paragraphs (a)(12) and (a)(13) of this section and the regulations described in paragraphs (b)(4), (5) and (6) of this section, shall be enforced by the Commanding Officer, Naval Weapons Station Charleston, SC, and such agencies as he/she may designate.

(2920) (10) It is understood that none of the restrictions herein will apply to properly marked Federal vessels performing official duties. It is further understood that Federal employees will not take photographs from within the above described restricted areas.

(2921) (11) The unauthorized entering or crossing of the danger zones described in paragraphs (a)(12) and (a)(13) of this section by all persons, watercraft and vessels is prohibited at all times unless specifically authorized by the Commanding Officer of the U.S. Naval Weapons Station Charleston, SC.

### §334.470 Cooper River and Charleston Harbor, S.C.: restricted areas.

(2922) (a) The Restricted Areas. (1) Area No. 1 is that portion of the Cooper River beginning near the westerly shore north of Shipyard Creek at

(2923) "a" 32°50'14"N., 79°56'11"W.; thence to

(2924) "b" 32°50'14"N., 79°55'37"W.; thence to

(2925) "c" 32°49'41"N., 79°55'37"W.; thence to

(2926) "d" 32°49'41"N., 79°55'52"W.; thence to

(2927) "e" 32°49'47"N., 79°56'09"W.; and thence returning to

(2928) "a" 32°50'14"N., 79°56'11"W.

(2929) (2) Area No. 2 is that portion of the Cooper River beginning at a point west of Shutes Folly Island at

(2930) "a" 32°46'27"N., 79°55'31"W.; thence to

(2931) "b" 32°46'39"N., 79°55'11"W.; thence to

(2932) "c" 32°46'39"N., 79°54'51"W.; thence to

(2933) "d" 32°46'28"N., 79°54'47"W.; thence to

(2934) "e" 32°46'17"N., 79°54'51"W.; thence to

(2935) "f" 32°46'17"N., 79°55'11"W.; and thence returning to

(2936) "a" 32°46'27"N., 79°55'31"W.

(2937) (b) The regulations. (1) There shall be no introduction of magnetic material or magneto-electric field sources within the area.

(2938) (2) No person shall enter or remain in the water within the restricted areas. Ships transiting the areas will proceed without delay and shall not, except as noted below, lie to or anchor within the areas.

(2939) (i) Pleasure craft under 50 feet LOA will not normally be affected; however, such craft may be required to stand clear upon notification, in the event they are interfering with range operation.

(2940) (ii) Anchored commercial ships will be allowed to swing into the restricted area at the Shutes Folly Island site when the range is not in use. Shutes Folly Island Range usage will be indicated by range house display of the international DELTA signal flag.

(2941) (iii) This section shall be enforced by the Commandant, Sixth Naval District, Charleston, South Carolina, and such agencies as he may designate.

### §334.475 Brickyard Creek and tributaries and the Broad River at Beaufort, SC.

(2942) (a) The areas: (1) That section of the Atlantic Intracoastal Waterway (AIWW), beginning at the confluence of the AIWW and Albergottie Creek, being that point on the west side of the AIWW navigational channel at 32°27'25"N., 80°41'16"W., thence continuing in a northerly direction along the western channel edge of the AIWW to

(2943) 32°27'32"N., 80°41'20"W., thence to

(2944) 32°27'36"N., 80°41'20"W., thence to

(2945) 32°27'39"N., 80°41'20"W., thence to

(2946) 32°27'50"N., 80°41'24"W., thence to

(2947) 32°28'12"N., 80°41'27"W., thence to

(2948) 32°28'15"N., 80°41'27"W., thence to

(2949) 32°28'30"N., 80°41'31"W., thence to

(2950) 32°28'40"N., 80°41'31"W., thence to

(2951) 32°28'44"N., 80°41'27"W., thence to

(2952) 32°28'55"N., 80°41'31"W., thence to

(2953) 32°29'34"N., 80°41'24"W., thence to

(2954) 32°29'38"N., 80°41'16"W., thence to

(2955) 32°29'49"N., 80°41'31"W. on the east shore of the Marine Corps Air Station (MCAS), at its intersection with the Station's property boundary line, thence heading south along the eastern shoreline of the MCAS to a point along the northern shoreline of Mulligan Creek at 32°29'24"N., 80°41'52"W., thence southwesterly across Mulligan Creek to the shoreline of the MCAS, at 32°29'16"N., 80°42'14"W., thence continuing along the eastern shoreline to its intersection with Albergottie Creek, at 32°27'14"N., 80°42'03"W., thence continuing along the southern shoreline of the MCAS to the intersection of Salt Creek with U.S. Highway 21, at 32°27'00"N., 80°43'55"W., thence back down the southern creek edge of Salt and Albergottie Creeks, thence back to the starting point at the confluence of Albergottie Creek and the AIWW, at 32°27'25"N., 80°41'16"W. Note: Situated within the boundaries of the area described in paragraph (a)(1) of this section are the areas described in paragraphs (a)(2), (a)(3), (a)(4), (a)(5) and the danger zone described in paragraph (a)(10) of this section. Since additional regulations apply to these sections, they are excluded from the area described in paragraph (a)(1) given that they are more strictly regulated.

(2956) (2) That portion of Mulligan Creek located on the southern side of the MCAS runway, beginning at a point on the eastern shoreline of Mulligan Creek at 32°29'24"N., 80°41'52"W., thence southwesterly across Mulligan Creek to the shoreline of the MCAS at 32°29'16"N., 80°42'14"W., thence continuing in a northerly direction along the eastern shoreline of the MCAS, thence in a northeasterly direction along the southern side of the MCAS runway, thence back down the eastern shoreline of Mulligan Creek to its starting point at 32°29'24"N., 80°41'52"W.

(2957) (3) That area adjacent to the Atlantic Intracoastal Waterway (AIWW), situated within the boundaries of the area described in paragraph (a)(1) of this section, beginning at a point on the west side of the AIWW navigational channel at 32°27'50"N., 80°41'24"W., thence continuing in a northerly direction along the western channel edge of the AIWW to 32°28'04"N., 80°41'27"W., thence turning in a westerly direction and continuing to 32°28'04"N., 80°42'00"W., on the eastern shore of the MCAS, thence heading in a southward direction along the shoreline to 32°27'50"N., 80°41'52"W., thence turning in a westerly direction and returning back to the starting point on the west edge of the AIWW channel at 32°27'50"N., 80°41'24"W.

(2958) (4) That area contiguous to Albergottie Creek, situated within the boundaries of the area described in paragraph (a)(1) of this section, beginning at a point on the southern shoreline of the MCAS at 32°27'07"N., 80°42'28"W., thence continuing in a northerly direction along the shoreline, up to the shoreline adjacent to Kimes Avenue and back down the opposite shoreline in a southerly direction to a point at 32°27'03"N., 80°42'57"W., thence turning in an easterly direction and returning back to the starting point at 32°27'07"N., 80°42'28"W.

(2959) (5) That area contiguous to Salt Creek, situated within the boundaries of the area described in paragraph (a)(1) of this section, beginning at a point on the southern shoreline of the MCAS and the edge of Salt Creek at 32°27'07"N., 80°43'26"W., thence continuing in a northerly direction along the shoreline of the MCAS and continuing on to its intersection again with Salt Creek and adjacent to U.S. Highway 21, thence turning and continuing along the shoreline of Salt Creek in an easterly direction and returning back to the starting point at 32°27'07"N., 80°43'26"W.

(2960) (6) That section of the Atlantic Intracoastal Waterway (AIWW), beginning at the confluence of the AIWW and Albergottie Creek, being that point on the west side of the AIWW navigational channel at 32°27'25"N., 80°41'16"W., thence continuing in a northerly direction along the western channel edge of the AIWW to

(2961) 32°27'32"N., 80°41'20"W., thence to

(2962) 32°27'36"N., 80°41'20"W., thence to

(2963) 32°27'39"N., 80°41'20"W., thence to

(2964) 32°27'50"N., 80°41'24"W., thence to

(2965) 32°28'12"N., 80°41'27"W., thence to

(2966) 32°28'15"N., 80°41'27"W., thence to

(2967) 32°28'30"N., 80°41'31"W., thence to

(2968) 32°28'40"N., 80°41'31"W., thence to

(2969) 32°28'44"N., 80°41'27"W., thence to

(2970) 32°28'55"N., 80°41'31"W., thence to

(2971) 32°29'34"N., 80°41'24"W., thence to

(2972) 32°29'38"N., 80°41'16"W., thence crossing the AIWW channel in a southeasterly direction to a point on the east side of the AIWW and the marsh edge of bank, at 32°29'34"N., 80°41'13"W., thence southward along the edge of the AIWW and the waterward marsh edge of Ladies Island to a point on the west shoreline of Pleasant Point Peninsular, at 32°27'28"N., 80°41'13"W., thence back across the AIWW navigational channel to the point of beginning, at 32°27'25"N., 80°41'16"W.

(2973) (7) That portion of Mulligan Creek, beginning at its northern mouth and confluence with McCalleys Creek, at 32°30'28"N., 80°41'34"W., thence proceeding in a westerly direction along the northern shoreline of Mulligan Creek to its intersection with Perryclear Drive bridge crossing, at 32°30'18"N., 80°42'00"W., thence back down the southern shoreline to its starting point at McCalleys Creek, at 32°30'28"N., 80°41'34"W.

(2974) (8) That portion of Mulligan Creek, beginning at the Perryclear Drive bridge crossing, at 32°30'18"N., 80°42'00"W., thence proceeding in a southwesterly direction along the northern shoreline of Mulligan Creek to the terminus of its western tributary, thence back down its southern shoreline to the terminus of its eastern terminus located at the northern end on the MCAS runway, at 32°29'42"N., 80°42'25"W., thence back down the southern shoreline to its starting point at Perryclear Drive bridge crossing, at 32°30'18"N., 80°42'00"W.

(2975) (9) (Laurel Bay Military Family Housing Area, Broad River) That section of the Broad River, beginning on the western shoreline of Laurel Bay Military Family Housing Area boundary line, at 32°26'56"N., 80°48'10"W., thence proceeding in a northerly direction along the shoreline to the housing area northern boundary line at 32°28'15"N., 80°48'36"W., thence proceeding a distance of 500 feet into the Broad River, at 32°28'15"N., 80°48'39"W., thence proceeding in a southerly direction and maintaining a distance of 500 feet from the shoreline to 32°26'56"N., 80°48'18"W., thence back towards the shoreline to the point of beginning at 32°26'56"N., 80°48'10"W.

(2976) (10) (Danger Zone). That portion of Mulligan Creek located adjacent to the MCAS firing range and the restricted area described in paragraph (a)(2) of this section, beginning at a point on the western shoreline of Mulligan Creek at 32°29'16"N., 80°42'14"W., thence northeasterly across Mulligan Creek to the opposite shoreline at 32°29'24"N., 80°41'52"W., thence continuing in a southeasterly direction to an upland island bordering the northern shoreline of Mulligan Creek at 32°29'09"N., 80°41'49"W., thence turning in a southwesterly direction and crossing Mulligan Creek to a point on the eastern shoreline of the MCAS at 32°29'06"N., 80°42'07"W., thence continuing along the eastern shoreline of the MCAS to its starting point at 32°29'16"N., 80°42'14"W.

(2977) (b) The regulation: (1) Unauthorized personnel, vessels and other watercraft shall not enter the restricted areas described in paragraphs (a)(2), (a)(3), (a)(4), (a)(5) and (a)(8) of this section at any time.

(2978) (2) The public shall have unrestricted access and use of the waters described in paragraph (a)(6) of this section whenever the MCAS is in Force Protection Condition Normal, Alpha or Bravo. Whenever the facility is in Force Protection Condition Charlie or Delta, personnel, vessels and other watercraft entering the restricted area described in paragraph (a)(6) of this section shall proceed at normal speed and shall under no circumstances anchor, fish, loiter or photograph in any way until clear of the restricted area.

(2979) (3) The public shall have unrestricted access and use of the waters described in paragraphs (a)(1), (a)(7), and (a)(9) of this section whenever the MCAS is in Force Protection Condition Normal Alpha or Bravo. Whenever the facility is in Force Protection Condition Charlie or Delta, personnel, vessels and other watercraft are prohibited from entering the waters described in paragraphs (a)(1), (a)(7), and (a)(9) of this section, unless they first obtain an escort or other approval from the Commander, MCAS, Beaufort, South Carolina.

(2980) (4) Unauthorized personnel, vessels and other watercraft shall not enter the danger zone described in paragraph (a)(10) of this section at any time.

(2981) (5) All restricted areas and danger zones will be marked with suitable warning signs.

(2982) (6) It is understood that none of the restrictions herein will apply to properly marked Federal vessels performing official duties.

(2983) (7) It is further understood that unauthorized personnel will not take photographs from within the above described restricted areas.

(2984) (c) Enforcement: The regulation in this section, promulgated by the United States Army Corps of Engineers, shall be enforced by the Commanding Officer, MCAS Beaufort, or persons or agencies as he/she may authorize including any Federal Agency, State, Local or County Law Enforcement agency, or Private Security Firm in the employment of the facility, so long as the entity undertaking to enforce this Restricted Area has the legal authority to do so under the appropriate Federal, State or local laws.

### §334.480 Archers Creek, Ribbon Creek and Broad River, S.C.; U.S. Marine Corps Recruit Depot Rifle and Pistol Ranges, Parris Island.

(2985) (a) During the periods when the rifle and pistol ranges on Parris Island are in use, the following areas will be restricted to navigation:

(2986) (1) At the rifle range. Archers Creek between Broad River and Beaufort River and Ribbon Creek from Broad Creek entrance. The area is inclosed by the following points:

(2987) 32°21'40"N., 80°44'52"W.;
(2988) 32°21'51"N., 80°44'38"W.;
(2989) 32°21'54"N., 80°44'41"W.;
(2990) 32°22'01"N., 80°44'21"W.;
(2991) 32°22'08"N., 80°44'15"W.;
(2992) 32°22'15"N., 80°44'07"W.;
(2993) 32°22'17"N., 80°44'05"W.;
(2994) 32°22'20"N., 80°43'52"W.;
(2995) 32°22'17"N., 80°43'48"W.;
(2996) 32°22'17"N., 80°43'47"W.;
(2997) 32°21'44"N., 80°43'28"W.;
(2998) 32°21'30"N., 80°43'13"W.;
(2999) 32°20'55"N., 80°42'23"W.;
(3000) 32°20'21"N., 80°42'24"W.;
(3001) 32°20'06"N., 80°42'43"W.;
(3002) 32°20'12"N., 80°43'01"W.;
(3003) 32°20'18"N., 80°43'22"W.;
(3004) 32°20'28"N., 80°43'33"W.;
(3005) 32°20'30"N., 80°43'37"W.;
(3006) 32°20'35"N., 80°43'41"W.;
(3007) and thence to point of beginning:
(3008) 32°21'40"N., 80°44'52"W.

(3009) (2) At the pistol range. An area in Broad River inclosed by the following points:

(3010) 32°20'09"N., 80°42'57"W.;
(3011) 32°19'27"N., 80°42'27"W.;
(3012) 32°18'57"N., 80°43'24"W.;
(3013) 32°19'39"N., 80°43'54"W.;
(3014) 32°20'00"N., 80°43'36"W.;
(3015) 32°20'00"N., 80°43'15"W.

(3016) The area will be adequately marked by red flags for the convenience and protection of the general public.

(3017) (b) Firing over these ranges will normally take place between the hours of 6:30 a.m. and 5 p.m., Monday through Friday, and from 6 a.m. to 12 noon on Saturday, National holidays excepted, and at other times as designated and properly published by the Commanding General, Parris Island Marine Base.

(3018) (c) No person, vessel and other watercraft shall enter the restricted waters when firing is in progress. At all other times these waters are open to navigation. Safety regulations shall be enforced at all times with the following specific precautions being provided by the Parris Island Marine Base:

(3019) (1) At the rifle range–Warning signs indicating the periods when the rifle range is in use will be posted at the entrances to Archers Creek and Ribbon Creek. Also the warning signs will be placed at the corners of the rifle range impact area.

(3020) (2) At the pistol range–Warning flag shall be flown from top of a lookout tower with a sentry lookout during actual firing. Also a patrol boat shall be accessible for clearing the area and warning all approaching vessels of the danger zone area and the schedule of firing. During storms or similar emergencies this area shall be opened to vessels to reach safety without undue delay for the preservation of life and property.

(3021) (d) The regulations in this section shall be enforced by the Commanding General, Marine Corps Recruit Depot, Parris Island, South Carolina, and such agencies as he may designate.

**§334.490 Atlantic Ocean off Georgia Coast; air-to-air and air-to-water gunnery and bombing ranges for fighter and bombardment aircraft, United States Air Force.**

(3022) (a) –(1) For fighter aircraft. An area approximately 30 miles offshore between Wassaw Sound and Brunswick, Georgia, described as follows: Beginning at

(3023) 31°55'30", 80°24'00"; thence 090° true to longitude 80°16'00"; thence southwesterly to

(3024) 31°10'00", 80°43'00"; thence 270° to longitude 80°51'00"; and then northeasterly to the point of beginning.

(3025) (2) For bombardment aircraft. An area approximately 70 miles off shore between Savannah Beach and Brunswick, Georgia, described as follows: Beginning at

(3026) 32°00'00", 79°43'00"; thence 090° true to longitude 79°07'00"; thence southwesterly to

(3027) 31°10'00", 79°24'00"; thence 270° true to longitude 80°00'00"; and thence northeasterly to the point of beginning.

(3028) (b) The regulations. (1) The danger zones shall be open to navigation except when aerial gunnery or bombing practice is being conducted.

(3029) (2) Prior to conducting each practice, the entire area will be patrolled by aircraft to warn any persons and watercraft found in the vicinity that such practice is about to take place. The warning will be by "buzzing," (i.e., by flying low over the person or watercraft.) Any person or watercraft shall, upon being so warned, immediately leave the area designated and shall remain outside the area until practice has ceased.

(3030) (3) The regulations in this section shall be enforced by the Commanding Officer, 2d Bombardment Wing, Hunter Air Force Base, Savannah, Georgia, and such agencies as he may designate.

**§334.500 St. Johns River, Atlantic Ocean, Sherman Creek; restricted areas and danger zone, Naval Station Mayport, Florida.**

(3031) (a) The areas. (1) The St. Johns River restricted area and the Atlantic Ocean restricted area described in paragraphs (a)(2) and (a)(3) of this section, respectively, are contiguous but each area is described separately for clarification.

(3032) (2) St. Johns River restricted area. This restricted area shall encompass all navigable waters of the United States, as defined at 33 CFR 329, within the area bounded by a line connecting the following coordinates: Commencing from the shoreline at

(3033) 30°23'52.97"N., 81°25'36.51"W.; thence to

(3034) 30°23'56.71"N., 81°25'36.51"W.; then the line meanders irregularly, follow the shoreline at a distance of 380 feet seaward from the mean high water line to a point at

(3035) 30°23'54.20"N., 81°24'14.11"W., thence proceed directly to

(3036) 30°23'46.33"N., 81°24'03.73"W., then the line meanders irregularly, follow the shoreline at a distance of 380 feet seaward from the mean high water line to a point at

(3037) 30°23'53.08"N., 81°23'34.00"W., thence follow the arc of a circle with a radius of 466 feet, centered at

(3038) 30°23'48.52"N., 81°23'33.30"W., to a point on the jetty at

(3039) 30°23'50.06"N., 81°23'28.26"W.

(3040) (3) Atlantic Ocean restricted area. From the last point identified in paragraph (a)(2) of this section,

(3041) 30°23'50.06"N., 81°23'28.26"W., proceed to a point at

(3042) 30°23'49.12"N., 81°23'28.10"W., then the line meanders irregularly, follow the shoreline at a distance of 380 feet seaward from the mean high water line to a point at

(3043) 30°22'54.37"N., 81°23'44.09"W., thence proceed directly to shore to terminate at

(3044) 30°22'54.46"N., 81°23'48.44"W.

(3045) (4) Sherman Creek restricted area. This restricted area shall encompass all navigable waters of the United States, as defined at 33 CFR part 329, to include Sherman Creek, its tributaries and associated tidal marshes located within the NAVSTA Mayport area boundaries described in this section. The restricted area is completely encircled by roadways and is bordered on the south by Wonderwood Expressway, on the west by SR A1A, on the

north by Perimeter Road, and on the east by Mayport Road.

(3046) (5) Danger zone. The danger zone shall encompass all navigable waters of the United States, as defined at 33 CFR part 329, within the area bounded by a line connecting the following coordinates: Commencing from the shoreline at

(3047) 30°24'00.31"N., 81°25'06.02"W.; thence to

(3048) 30°24'11.16"N., 81°25'03.90"W.; thence to

(3049) 30°24'00.62"N., 81°24'10.13"W.; thence to a point on the shoreline riprap at

(3050) 30°23'41.26"N., 81°24'08.82"W.

(3051) (b) The regulations–(1) St. Johns River restricted area. All persons, vessels, or other craft are prohibited from entering, transiting, drifting, dredging, or anchoring within the area described in paragraph (a)(2) of this section without the permission of the Commanding Officer, NAVSTA Mayport or his/her authorized representative. This restriction will be in place 24 hours a day, seven days a week. Warning signs notifying individuals of the restricted area boundary and prohibiting entry into the area will be posted at 500-foot intervals along the property boundary.

(3052) (2) Atlantic Ocean restricted area. All persons, vessels, or other craft are prohibited from entering, transiting, drifting, dredging, or anchoring within the area described in paragraph (a)(3) of this section without the permission of the Commanding Officer, NAVSTA Mayport or his/her authorized representative. This restriction will be in place 24 hours a day, seven days a week. Warning signs notifying individuals of the restricted area boundary and prohibiting entry into the area will be posted at 500-foot intervals along the property boundary.

(3053) (3) Sherman Creek restricted area. All persons, vessels, or other craft are prohibited from entering, transiting, drifting, dredging, or anchoring within the area described in paragraph (a)(4) of this section without the permission of the Commanding Officer, NAVSTA Mayport or his/her authorized representative. This restriction will be in place 24 hours a day, seven days a week. Warning signs notifying individuals of the restricted area boundary and prohibiting entry into the area will be posted at 500-foot intervals along the property boundary where practicable (e.g., not in the wetlands). In addition, a floating Small Craft Intrusion Barrier will be placed across Sherman Creek just east of the A1A bridge and another will be placed across tributaries to Sherman Creek just north of the Wonderwood Expressway.

(3054) (4) Danger zone. During periods of munitions movement at wharves Bravo and Charlie, no person or vessel shall be allowed to remain within the 1,250-foot Explosive Safety Quantity-Distance arcs generated by the activity. NAVSTA Mayport will not announce or publish notification prior to enforcing this regulation due to the unacceptable security threat posed by advance public notice of military munitions movements.

(3055) (c) Enforcement. The regulations in this section shall be enforced by the Commanding Officer, NAVSTA Mayport and/or such persons or agencies as he/she may designate. Military vessels will patrol the areas identified in this section 24 hours a day, 7 days a week. Any person or vessel encroaching within the areas identified in this section will be asked to immediately leave the area. Failure to do so will result in the forceful removal of the person or vessel from the area in question.

### §334.510 U.S. Navy Fuel Depot Pier, St. Johns River, Jacksonville, Fla.; restricted area.

(3056) (a) The area is described as:

(3057) (1) A line running at 238.5° true and paralleling the pier at 100 feet is extended from the eastern edge of the mooring platform No.59 to the western edge of platform No.65. From these points the boundaries are extended to the shoreline along lines running at 328.5°.

(3058) (2) The easterly waterward coordinate being:

(3059) 30°23'58.0"N., 81°37'15.0"W.

(3060) (3) The westerly waterward coordinate being:

(3061) 30°23'53.0"N., 81°37'24.4"W.

(3062) (b) The regulations. (1) The use of waters as previously described by private and/or commercial floating craft or persons is prohibited with the exception of vessels or persons that have been specifically authorized to do so by the Officer in Charge of the Navy Fuel Depot.

(3063) (2) This regulation shall be enforced by the Officer in Charge, U.S. Navy Fuel Depot, Jacksonville, Florida, and such agencies as the officer in charge may designate.

### §334.515 Blount Island Command and Marine Corps Support Facility - Blount Island; Jacksonville, Florida restricted areas.

(3064) (a) The areas. (1) The restricted areas shall encompass all navigable waters of the United States, as defined at 33 CFR 329, contiguous to the area identified as Blount Island Command and Marine Corps Support Facility-Blount Island (MCSF-BI). The three areas are contiguous but each area is described separately below for clarification.

(3065) (2) Area 1. Commencing from the shoreline at the northwest portion of the facility, at 30°24'46.10"N., 81°32'19.01"W., thence proceed 200 yards in a northwesterly direction to 30°24'49.84"N., 81°32'23.12"W. From this point the line meanders irregularly, following the shoreline at a distance of 200 yards from the mean high water line to a point 30°23'36.75"N., 81°30'26.42"W., thence southwesterly to a point at 30°23'34.44"N., 81°30'28.80"W., thence west southwesterly to a point at 30°23'33.68"N., 81°30'32.61"W.

(3066) (3) Area 2. This includes all waters within the area generally identified as the U.S. Marine Corps Slipway but which is also known as the Back River area and the waters out to a distance of 100 yards from the entranceway. From the last point identified in paragraph (a)(2) of this section, 30°23'33.68"N., 81°30'32.61"W.,

proceed west southwesterly to a point at 30°23'30.93"N., 81°30'57.14"W.

(3067) (4) Area 3. From the last point identified in paragraph (a)(3) of this section, 30°23'30.93"N., 81°30'57.14"W., the line meanders irregularly in a westerly direction, following the shoreline at a distance of 100 yards from the mean high water line to a point at 30°23'26.34"N., 81°31'49.73"W., thence proceed north to terminate at a point on the shoreline at 30°23'29.34"N., 81°31'49.79"W.

(3068) (b) The regulations. (1) With the exception of local, State and federal law enforcement entities, all persons, vessels, and other craft are prohibited from entering, transiting, anchoring, or drifting within the areas described in paragraph (a) of this section for any reason without the permission of the Commanding Officer, Marine Corps Support Facility-Blount Island, Jacksonville, Florida, or his/her authorized representative.

(3069) (2) The restriction noted in paragraph (b)(1) of this section is in effect 24 hours a day, 7 days a week.

(3070) (3) Warning signs will be posted near the MCSF-BI shoreline advising boaters of the restrictions in this section.

(3071) (c) Enforcement. (1) The regulations in this section shall be enforced by the Commanding Officer, Marine Corps Support Facility-Blount Island, Jacksonville, Florida, and/or such persons or agencies as he/she may designate.

(3072) (2) Enforcement of the regulations in this section will be accomplished utilizing the Department of Defense Force Protection Condition (FPCON) System. From the lowest security level to the highest, Force Protection Conditions levels are titled Normal, Alpha, Bravo, Charlie and Delta. The regulations in this section will be enforced as noted in paragraph (b) of this section, or at the discretion of the Commanding Officer.

### §334.520 Lake George, Fla.; naval bombing area.

(3073) (a) The danger zone. An area in the eastern part of Lake George described as follows: Beginning at

(3074) 29°13'16", 81°34'28"; thence along a line parallel to the navigation channel to

(3075) 29°20'05", 81°36'15"; thence along a line about three-fifths mile southerly from the Putnam-Volusia County line to

(3076) 29°20'19", 81°35'12"; thence to

(3077) 29°18'36", 81°33'53"; thence to

(3078) 29°13'22", 81°32'38"; and thence to the point of beginning. The area will be marked by appropriate warnings signs at the five corners and at the midpoint of the longer side.

(3079) (b) The regulations. (1) Bombing operations will be confined, as nearly as practicable, to the north-south center line of the danger zone, keeping well clear of the navigation channel.

(3080) (2) Prior to each bombing operation the danger zone will be patrolled by naval aircraft which will warn all persons and vessels to leave the area by "zooming" a safe distance to the side and at least 500 feet above the surface. Upon being so warned, such persons and vessels shall leave the danger zone immediately and shall not re-enter the danger zone until bombing operations have ceased.

(3081) (3) At intervals of not more than three months, public notices will be issued that bombing operations are continuing. Such notices will appear in the local newspaper and in "Notice to Mariners."

(3082) (4) The regulations in this section shall not deny passage through Lake George by regular cargo-carrying vessels proceeding along established lanes for such vessels. When any such vessel is within the danger zone the officer in charge of the bombing operations will cause the cessation or postponement of such operations until the vessel has cleared the area. The vessel shall proceed on its normal course and shall not delay its progress.

(3083) (5) The regulations in this section shall be enforced by the Commander, Naval Air Bases, Sixth Naval District, Naval Air Station, Jacksonville, Florida, and such agencies as he may designate.

### §334.525 Atlantic Ocean off John F. Kennedy Space Center, FL; Restricted Area.

(3084) (a) The area. The restricted area shall encompass all navigable waters of the United States, as defined at 33 CFR 329, contiguous to the area offshore of the John F. Kennedy Space Center (KSC), Florida. The area is bounded by a line connecting the following coordinates: Commencing from the shoreline at the southwest portion of the area, at 28°35'00.5"N., 80°34'26.9"W., thence directly to 28°35'43.0"N., 80°32'56.3"W., thence follow the mean high water line northerly at a distance of 1.5 nautical miles to a point at 28°43'34.0"N., 80°39'05.6"W., thence proceed westerly to terminate at a point on the shoreline at 28°43'34.0"N., 80°41'11.3"W.

(3085) (b) The regulation. (1) The area described in paragraph (a) of this section will be closed when it is deemed necessary by the Director, KSC or his/her designee during launch operations or to address any perceived threat to the facilities. With the exception of local, State, and Federal law enforcement entities, all persons, vessels, and other craft are prohibited from entering, transiting, anchoring, or drifting within the restricted area when it is closed, unless they have the permission of the Director, KSC or his/her designee.

(3086) (2) Due to the nature of this restricted area, closures may occur with little advance notice. Closure of the area shall be noticed by warning statements displayed on the electronic marquee signs located at the gates of the KSC and on an electronic marquee sign located on the north side of the Port Canaveral ship channel between the Trident and Poseidon wharfs during the duration of the closure. If time permits, additional information will be published in area newspapers and announced on marine radio broadcast.

(3087) (c) Enforcement. The regulations in this section shall be enforced by the Director, KSC and/or such persons or agencies as he/she may designate.

**§334.530 Canaveral Harbor adjacent to the Navy pier at Port Canaveral, FL.; restricted area.**

(3088) (a) The area. The waters of Canaveral Harbor within a line circumscribing the water approaches to the Navy pier along the northeasterly edge of the Canaveral Harbor turning basin at a distance of 200 feet from all portions of the pier including the dolphins 200 feet off the northwest end and 75 feet off the southeast end of the pier.

(3089) (b) The regulations. (1) All unauthorized vessels and personnel are prohibited from the area during specified periods.

(3090) (2) The area will be closed when a red square flag (bravo), and depending on the status of the hazardous operation, either an amber or red beacon, steady burning or rotating, day or night, when displayed from any of the three berths along the wharf.

(3091) (3) Lighted signs indicating the restricted area will be placed on the pier and adjacent thereto.

(3092) (4) The regulations in this section shall be enforced by the Commanding Officer, U.S. Naval Ordnance Test Unit, AFMTC, Patrick Air Force Base, Florida.

**§334.540 Banana River at the Eastern Range, 45th Space Wing, Cape Canaveral Air Force Station, FL; Restricted Area.**

(3093) (a) The area. The restricted area shall encompass all navigable waters of the United States, as defined at 33 CFR part 329, within the Banana River contiguous to the area offshore of Cape Canaveral Air Force Station, Florida. The area is bounded by a line connecting the following coordinates: Commencing from the shoreline at the southeast portion of the area, at approximately

(3094) 28°25.17'N., 80°36.24'W.; thence directly to

(3095) 28°25.18'N., 80°36.65'W.; thence directly to

(3096) 28°25.25'N., 80°36.66'W.; thence directly to

(3097) 28°25.22'N., 80°38.36'W.; thence directly to

(3098) 28°26.23'N., 80°38.25'W.; thence directly to

(3099) 28°26.23'N., 80°38.47'W.; thence to reach the south side of the Kennedy Space Center NASA Causeway East Roadway at approximately 29°30.74'N., 80°36.63'W.

(3100) (b) The regulation. (1) The area described in paragraph (a) of this section will be closed when it is deemed necessary by the Commander, 45th Space Wing or his/her designee to address any perceived threat to the local area. With the exception of local, State, and Federal law enforcement entities, all persons, vessels, and other craft are prohibited from entering, transiting, anchoring, or drifting within the restricted area when it is closed without the permission of the Commander, 45th Space Wing or his/her designee.

(3101) (2) Due to the nature of this restricted area, closures may occur with very little advance notice. Closure of the area shall be noticed by the display of a red beacon located at the southern entrance to Cape Canaveral Air Force Station. Information will be provided via marine radio broadcast during the duration of the area closure.

(3102) (c) Enforcement. The regulations in this section shall be enforced by the Commander, 45th Space Wing, Patrick Air Force Base, Florida and/or such persons or agencies as he/she may designate.

**§334.550 [Removed]**

**§334.560 Banana River at Patrick Air Force Base, Fla., restricted area.**

(3103) (a) The area. The waters within an area beginning at a point located at

(3104) 28°16'19"N., 80°36'28"W.; proceed west to

(3105) 28°16'19"N., 80°36'35"W.; thence, southwesterly to

(3106) 28°14'34"N., 80°37'08"W.; thence, southerly to

(3107) 28°12'44"N., 80°37'18"W.; thence, east to

(3108) 28°12'44"N., 80°37'11"W.

(3109) This encompasses an area reaching from the northern extent described to the southern extent described and extending from the mean high water line waterward a minimum distance of approximately 600 feet.

(3110) (b) The regulations. (1) All unauthorized persons and watercraft shall stay clear of the area at all times.

(3111) (2) The regulations in this section shall be enforced by the Commander, 45th Space Wing, Patrick Air Force Base, Florida, and such agencies as he/she may designate.

**§334.570 Banana River near Orsino, FL; restricted area.**

(3112) (a) The area. That part of Banana River N of the NASA Banana River Causeway near Orsino and extending above the head of said river to the N and westerly to Kennedy Parkway North.

(3113) (b) The regulations. (1) All unauthorized craft and personnel shall stay clear of the area at all times.

(3114) (2) The regulations in this section shall be enforced by the Director, John F. Kennedy Space Center, NASA, Cocoa Beach, Fla.

**§334.580 Atlantic Ocean near Port Everglades, Fla.; naval restricted area.**

(3115) (a) The area. Beginning at a point at

(3116) 26°05'30"N., 80°03'30"W.; proceed west to

(3117) 26°05'30"N., 80°06'30"W.; thence, southerly to

(3118) 26°03'00"N., 80°06'42"W., thence, east to

(3119) 26°03'00"N., 80°05'44"W.; thence, south to

(3120) 26°01'36"N., 80°05'44"W.; thence, east to

(3121) 26°01'36"N., 80°03'30"W.; thence, north to the point of beginning.

(3122) (b) The regulations. (1) Anchoring, trawling, dredging, or attaching any object to the submerged sea bottom shall be prohibited in the above described area.

(3123) (2) The regulations of this section shall be enforced by the Facility Director, Naval Surface Warfare Center, Detachment Dania, Florida, and such agencies as he/she may designate.

**§334.590 Atlantic Ocean off Cape Canaveral, Fla.; Air Force Missile Testing Area, Patrick Air Force Base, FL.**

(3124) (a) The danger zone. An area in the Atlantic Ocean immediately offshore from Cape Canaveral defined by a line 3 nautical miles from shore, said area terminating in the north at a line on a bearing of 070° from a point on shore at approximate latitude 28°35' north and in the south at a line on a bearing of 115° from a point on the shore at approximate latitude 28°25' north.

(3125) (b) The regulations. (1) All unauthorized persons and vessels are prohibited from operating within the danger zone during firing periods to be specified by the Commander, Air Force Missile Test Center, Patrick Air Force Base.

(3126) (2) Warning signals will be used to warn persons and vessels that the danger zone is active. These signals will be in the form of a large red ball and a red flashing high intensity beacon. One signal will be located on a 90-foot pole near the shoreline at the north end of the danger zone, and one signal will be located on a 90-foot pole near the shoreline about one-half mile north of the south limit of the danger zone. An amber rotating beacon and warning sign will be erected on the north side of the Port Canaveral ship channel to indicate to vessels about to leave the harbor that the danger zone is in use.

(3127) (3) When the signals in paragraph (b)(2) of this section are displayed, all persons and vessels, except those authorized personnel and patrol vessels, will immediately leave the danger zone by the most direct route and stay out until the signals are discontinued.

(3128) (4) The regulations in this paragraph shall be enforced by the Commander, Air Force Missile Test Center, Patrick Air Force Base, Fla., and such agencies as he may designate.

**§334.595 Atlantic Ocean off Cape Canaveral; 45th Space Wing, Cape Canaveral Air Force Station, FL; Restricted Area.**

(3129) (a) The area. The restricted area shall encompass all navigable waters of the United States, as defined at 33 CFR part 329, contiguous to the area offshore of Cape Canaveral Air Force Station, Florida. The area is bounded by a line connecting the following coordinates: Commencing from the shoreline at the northwest portion of the area, at

(3130) 28°35.008'N., 80°34.448'W.; thence directly to

(3131) 28°35.716'N., 80°32.938'W., thence following the mean high water line at a distance of 1.5 nautical miles offshore proceed southerly to a point at

(3132) 28°24.187'N., 80°33.443'W., thence proceeding

(3133) 28°24.69'N., 80°35.05'W.

(3134) (b) The regulation. (1) The area described in paragraph (a) of this section will be closed when it is deemed necessary by the Commander, 45th Space Wing or his/her designee to address any perceived threat to the local area. With the exception of local, State, and Federal law enforcement entities, all persons, vessels, and other craft are prohibited from entering, transiting, anchoring, or drifting within the restricted area when it is closed without the permission of the Commander, 45th Space Wing or his/her designee.

(3135) (2) Due to the nature of this restricted area, closures may occur with very little advance notice. Closure of the area shall be noticed by the display of a red ball and red beacon from a 90-foot pole near the shoreline at approximately

(3136) 28°35.0'N., 80°34.8'W and from a 90-foot pole near the shoreline at approximately

(3137) 28°25.3'N., 80°35.0'W. Information will be provided via marine radio broadcast and a warning statement displayed on an electronic marquee sign located on the north side of the Port Canaveral ship channel between the Trident and Poseidon Wharf during the duration of the area closure.

(3138) (c) Enforcement. The regulations in this section shall be enforced by the Commander, 45th Space Wing, Patrick Air Force Base, Florida and/or such persons or agencies as he/she may designate.

**§334.600 Trident Basin Adjacent to Canaveral Harbor at Cape Canaveral Air Force Station, Brevard County, Florida Danger Zone.**

(3139) (a) The Danger Zone. From the west side of the access channel at latitude 28°24'37", longitude 80°35'35" to the east side of the access channel at latitude 28°24'37", longitude 80°35'26" and the entire basin.

(3140) (b) The regulations. (1) No unauthorized person or vessel shall enter the area. The area will be used for loading and unloading explosives. The entrance to the basin will be marked by suitable boundary signs.

(3141) (2) The regulations will be enforced by the Commanding Officer, Naval Ordnance Test Unit, Patrick Air Force Base, Florida, or such agencies he may designate.

**§334.610 Key West Harbor, at U.S. Naval Base, Key West, Fla.; naval restricted areas and danger zone.**

(3142) (a) The areas. (1) All waters within 100 yards of the south shoreline of the Harry S. Truman Annex, beginning at a point on the shore at

(3143) 24°32'45.3"N., 81°47'51"W.; thence to a point 100 yards due south of the south end of Whitehead Street of

(3144) 24°32'42.3"N., 81°47'51"W.; thence extending westerly, paralleling the southerly shoreline of the Harry S. Truman Annex, to

(3145) 24°32'37.6"N., 81°48'32"W.; thence northerly to the shore at

(3146) 24°32'41"N., 81°48'31"W. (Area #1).

(3147) (2) All waters within 100 yards of the westerly shoreline of the Harry S. Truman Annex and all waters within a portion of the Truman Annex Harbor, as defined by a line beginning on the shore at

(3148) 24°33'00"N., 81°48'41.7"W.; thence to a point 100 yards due west at

(3149) 24°33'00"N., 81°48'45"W.; thence northerly, paralleling the westerly shoreline of the Harry S. Truman

Annex, including a portion of the Truman Annex Harbor entrance, to

(3150) 24°33'23"N., 81°48'37"W.; thence southeasterly to the shore (sea wall) at

(3151) 24°33'19.3"N., 81°48'28.7"W. (Area #2).

(3152) (3) All waters within 100 yards of the U.S. Coast Guard Station and the westerly end of Trumbo Point Annex beginning at the shore at

(3153) 24°33'47.6"N., 81°47'55.6"W.; thence westerly to

(3154) 24°33'48"N., 81°48'00.9"W.; thence due south to

(3155) 24°33'45.8"N., 81°48'00.9"W.; thence westerly to

(3156) 24°33'47"N., 81°48'12"W.; thence northerly to

(3157) 24°34'06.2"N., 81°48'10"W.; thence easterly to a point joining the restricted area around Fleming Key at

(3158) 24°34'03.3"N., 81°47'55"W. (Area #3).

(3159) (4) Beginning at the last point designated in area 3 at 24°34.0550'N., 81°47.9166'W.; proceed in a northwesterly direction to a point at

(3160) 24°34.2725'N., 81°48.1304'W.; thence northeasterly to

(3161) 24°34.3562'N., 81°48.0192'W.; thence northwesterly direction to

(3162) 24°34.4506'N., 81°48.1444'W.; thence northwesterly to

(3163) 24°34.5619'N., 81°48.1873'W.; thence northeasterly to

(3164) 24°34.9084'N., 81°48.0945'W.; thence northeasterly to

(3165) 24°34.9809'N., 81°47.9400'W.; proceed in a general northerly direction maintaining a distance of 100 yards from the shoreline of Fleming Key, continue around Fleming Key to a point easterly of the southeast corner of Fleming Key at

(3166) 24°34.0133'N., 81°47.6250'W.; thence easterly to

(3167) 24°33.9600'N., 81°47.3333'W.; thence southerly to a point on the shore at

(3168) 24°33.9117'N., 81°47.3450'W. The Department of the Navy plans to install buoys along that portion of the restricted area boundary which marks the outer edge of the explosive hazard safety distance requirements.

(3169) (5) All waters contiguous to the southwesterly shoreline of Boca Chica Key beginning at a point on the southwest shoreline at

(3170) 24°33'24"N., 81°42'30"W.; proceed due south 100 yards to

(3171) 24°33'20.4"N., 81°42'30"W.; thence, maintaining a distance 100 yards from the shoreline, proceed westerly and northerly to

(3172) 24°34'03"N., 81°42'47"W.; thence due north to a point at the easterly end of the U.S. Highway 1 (Boca Chica Channel) bridge at

(3173) 24°34'39"N., 81°42'47"W. (Area #5).

(3174) (6) Danger zone. All waters within an area along the northeast side of the Naval Air Station on Boca Chica Key defined by a line beginning at

(3175) 24°35.472'N., 81°41.824'W.; thence proceed in a northerly direction to a point at

(3176) 24°36.289'N., 81°41.437'W.; thence proceed westerly to a point at

(3177) 24°36.392'N., 81°41.970'W.; thence to a point on shore at

(3178) 24°35.698'N., 81°41.981'W.

(3179) (b) The regulations: (1) Entering or crossing Restricted Areas #1 and #4 and the Danger Zone (Area #6) described in paragraph (a) of this section, by any person or vessel, is prohibited.

(3180) (2) Privately owned vessels, properly registered and bearing identification in accordance with Federal and/or State laws and regulations may transit the following portions of restricted area #2, #3 and #5. NOTE: All vessels entering the areas at night must display lights as required by Federal laws and Coast Guard regulations or, if no constant lights are required, then the vessel must display a bright white showing all around the horizon,

(3181) (i) The channel, approximately 75 yards in width, extending from the northwest corner of Pier D-3 of Trumbo Point Annex, eastward beneath the Fleming Key bridge and along the north shore of Trumbo Point Annex (area #3).

(3182) (ii) A channel of 150 feet in width which extends easterly from the main ship channel into Key West Bight, the northerly edge of which channel passes 25 feet south of the Trumbo Point Annex piers on the north side of the Bight. While the legitimate access of privately owned vessels to facilities of Key West Bight is unimpeded, it is prohibited to moor, anchor, or fish within 50 feet of any U.S. Government-owned pier or craft (area #3).

(3183) (iii) The dredged portion of Boca Chica channel from its seaward end to a point due south of the east end of the Boca Chica Bridge (area #5).

(3184) (iv) All of the portion of Restricted Area No. 2 that lies between the Truman Annex Mole and the Key West Harbor Range Channel. The transit zone extends to the northwesterly corner of the Truman Annex Mole, thence to the northwesterly end of the breakwater at

(3185) 24°33'21.3"N., 81°48'32.7"W.

(3186) (3) Stopping or landing by any person and/or any vessel, other than Government-owned vessels and specifically authorized private craft in any of the restricted areas or danger zone described in paragraph (a) of this section is prohibited.

(3187) (4) Vessels using the restricted channel areas described in paragraph (b)(2)(i), (ii), (iii), and (iv) of this section shall proceed at speeds commensurate with minimum wake.

(3188) (c) The regulations in this section shall be enforced by the Commanding Officer, Naval Air Station, Key West, Florida, and such agencies as he/she may designate.

### §334.620 Straits of Florida and Florida Bay in vicinity of Key West, FL; operational training area, aerial

**gunnery range, and bombing and strafing target areas, Naval Air Station, Key West, FL.**

(3189) (a) The danger zones–(1) Operational training area. Waters of the Straits of Florida and Gulf of Mexico southwest, west and northwest of Key West bounded as follows: Beginning at latitude 25°45'00", longitude 82°07'00"; thence southeast to

(3190) 24°49'00", 81°55'00"; thence southwest to

(3191) 24°37'30", 82°00'30"; thence westerly to

(3192) 24°37'30", 82°06'00"; thence southerly to

(3193) 24°28'30", 82°06'00"; thence southerly to

(3194) 24°25'00", 82°06'30"; thence easterly to

(3195) 24°25'00", 81°57'00"; thence southwesterly to

(3196) 23°30'00", 82°19'00"; thence westerly to

(3197) 23°30'00", 82°46'00"; thence northwesterly to

(3198) 23°52'30", 83°11'00"; thence northerly to

(3199) 24°25'00", 83°11'00"; thence easterly to

(3200) 24°25'00", 83°08'00"; thence clockwise along the arc of a circle with a radius of 92 miles centered at

(3201) 24°35'00", 81°41'15" to

(3202) 25°45'05", 82°23'30"; thence east to point of beginning.

(3203) (2) Bombing and strafing target areas.

(3204) (i) A circular area immediately west of Marquesas Keys with a radius of two nautical miles having its center at

(3205) 24°33.4'N., 82°10.9'W., not to include land area and area within Marquesas Keys. The target located within this area, a grounded LSIL will be used for bombing and aircraft rocket exercises.

(3206) (ii) A circular area located directly west of Marquesas Keys with a radius of three statute miles having its center at

(3207) 24°35.6'N., 82°11.6'W., not to include land area within Marquesas Keys. The targets located within this area, pile-mounted platforms, will be used as high altitude horizontal bombing range utilizing live ordnance up to and including 1,800 pounds of high explosives. In general, these explosives will be of an air-burst type, above 1,500 feet.

(3208) (iii) A circular area located west of Marquesas Keys with a radius of two nautical miles having its center at

(3209) 24°34'30", 82°14'00".

(3210) (b) The regulations. (1) In advance of scheduled air or surface operations which, in the opinion of the enforcing agency, may be dangerous to watercraft, appropriate warnings will be issued to navigation interests through official government and civilian channels or in such other manner as the District Engineer, Corps of Engineers, Jacksonville, Florida, may direct. Such warnings will specify the location, type, time, and duration of operations, and give such other pertinent information as may be required in the interests of safety.

(3211) (2) Watercraft shall not be prohibited from passing through the operational training area except when the operations being conducted are of such nature that the exclusion of watercraft is required in the interest of safety or for accomplishment of the mission, or is considered important to the national security.

(3212) (3) When the warning to navigation interests states that bombing and strafing operations will take place over the designated target areas or that other operations hazardous to watercraft are proposed to be conducted in a specifically described portion of the overall area, all watercraft will be excluded from the target area or otherwise described zone of operations and no vessel shall enter or remain therein during the period operations are in progress.

(3213) (4) Aircraft and naval vessels conducting operations in any part of the operational training area will exercise caution in order not to endanger watercraft. Operations which may be dangerous to watercraft will not be conducted without first ascertaining that the zone of operations is clear. Any vessel in the zone of operations will be warned to leave and upon being so warned the vessel shall leave immediately.

(3214) (5) The regulations in this section shall be enforced by the Commandant, Sixth Naval District, Charleston, S.C., and such agencies as he may designate.

## TITLE 40–PROTECTION OF ENVIRONMENT

## Part 140–Marine Sanitation Device Standard

**§140.1 Definitions.**

(3215) For the purpose of these standards the following definitions shall apply:

(3216) (a) Sewage means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes;

(3217) (b) Discharge includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping;

(3218) (c) Marine sanitation device includes any equipment for installation onboard a vessel and which is designed to receive, retain, treat, or discharge sewage and any process to treat such sewage;

(3219) (d) Vessel includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on waters of the United States;

(3220) (e) New vessel refers to any vessel on which construction was initiated on or after January 30, 1975;

(3221) (f) Existing vessel refers to any vessel on which construction was initiated before January 30, 1975;

(3222) (g) Fecal coliform bacteria are those organisms associated with the intestines of warm-blooded animals that are commonly used to indicate the presence of fecal material and the potential presence of organisms capable of causing human disease.

**§140.2 Scope of standard.**

(3223) The standard adopted herein applies only to vessels on which a marine sanitation device has been installed. The standard does not require the installation of a marine sanitation device on any vessel that is not so equipped. The standard applies to vessels owned and operated by the United States unless the Secretary of Defense finds that compliance would not be in the interest of national security.

**§140.3 Standard.**

(3224) (a) (1) In freshwater lakes, freshwater reservoirs or other freshwater impoundments whose inlets or outlets are such as to prevent the ingress or egress by vessel traffic subject to this regulation, or in rivers not capable of navigation by interstate vessel traffic subject to this regulation, marine sanitation devices certified by the U.S. Coast Guard (see 33 CFR part 159, published in 40 FR 4622, January 30, 1975), installed on all vessels shall be designed and operated to prevent the overboard discharge of sewage, treated or untreated, or of any waste derived from sewage. This shall not be construed to prohibit the carriage of Coast Guard-certified flow-through treatment devices which have been secured so as to prevent such discharges.

(3225) (2) In all other waters, Coast Guard-certified marine sanitation devices installed on all vessels shall be designed and operated to either retain, dispose of, or discharge sewage. If the device has a discharge, subject to paragraph (d) of this section, the effluent shall not have a fecal coliform bacterial count of greater than 1,000 per 100 milliliters nor visible floating solids. Waters where a Coast Guard-certified marine sanitation device permitting discharge is allowed include coastal waters and estuaries, the Great Lakes and inter-connected waterways, fresh-water lakes and impoundments accessible through locks, and other flowing waters that are navigable interstate by vessels subject to this regulation.

(3226) (b) This standard shall become effective on January 30, 1977 for new vessels and on January 30, 1980 for existing vessels (or, in the case of vessels owned and operated by the Department of Defense, two years and five years, for new and existing vessels, respectively, after promulgation of implementing regulations by the Secretary of Defense under section 312(d) of the Act).

(3227) (c) Any vessel which is equipped as of the date of promulgation of this regulation with a Coast Guard-certified flow-through marine sanitation device meeting the requirements of paragraph (a)(2) of this section, shall not be required to comply with the provisions designed to prevent the overboard discharge of sewage, treated or untreated, in paragraph (a)(1) of this section, for the operable life of that device.

(3228) (d) After January 30, 1980, subject to paragraphs (e) and (f) of this section, marine sanitation devices on all vessels on waters that are not subject to a prohibition of the overboard discharge of sewage, treated or untreated, as specified in paragraph (a)(1) of this section, shall be designed and operated to either retain, dispose of, or discharge sewage, and shall be certified by the U.S. Coast Guard. If the device has a discharge, the effluent shall not have a fecal coliform bacterial count of greater than 200 per 100 milliliters, nor suspended solids greater than 150 mg/1.

(3229) (e) Any existing vessel on waters not subject to a prohibition of the overboard discharge of sewage in paragraph (a)(1) of this section, and which is equipped with a certified device on or before January 30, 1978, shall not be required to comply with paragraph (d) of this section, for the operable life of that device.

(3230) (f) Any new vessel on waters not subject to the prohibition of the overboard discharge of sewage in paragraph (a)(1) of this section, and on which construction is initiated before January 31, 1980, which is equipped with a marine sanitation device before January 31, 1980, certified under paragraph (a)(2) of this section, shall not be required to comply with paragraph (d) of this section, for the operable life of that device.

(3231) (g) The degrees of treatment described in paragraphs (a) and (d) of this section are "appropriate standards" for purposes of Coast Guard and Department of Defense certification pursuant to section 312(g)(2) of the Act.

**§140.4 Complete prohibition.**

(3232) (a) Prohibition pursuant to CWA section 312(f)(3): a State may completely prohibit the discharge from all vessels of any sewage, whether treated or not, into some or all of the waters within such State by making a written application to the Administrator, Environmental Protection Agency, and by receiving the Administrator's affirmative determination pursuant to section 312(f)(3) of the Act. Upon receipt of an application under section 312(f)(3) of the Act, the Administrator will determine within 90 days whether adequate facilities for the safe and sanitary removal and treatment of sewage from all vessels using such waters are reasonably available. Applications made by States pursuant to section 312(f)(3) of the Act shall include:

(3233) (1) A certification that the protection and enhancement of the waters described in the petition require greater environmental protection than the applicable Federal standard;

(3234) (2) A map showing the location of commercial and recreational pump-out facilities;

(3235) (3) A description of the location of pump-out facilities within waters designated for no discharge;

(3236) (4) The general schedule of operating hours of the pump-out facilities;

(3237) (5) The draught requirements on vessels that may be excluded because of insufficient water depth adjacent to the facility;

(3238) (6) Information indicating that treatment of wastes from such pump-out facilities is in conformance with Federal law; and

(3239) (7) Information on vessel population and vessel usage of the subject waters.

(3240) (b) Prohibition pursuant to CWA section 312(f)(4)(A): a State may make a written application to the Administrator, Environmental Protection Agency, under section 312(f)(4)(A) of the Act, for the issuance of a regulation completely prohibiting discharge from a vessel of any sewage, whether treated or not, into particular waters of the United States or specified portions thereof, which waters are located within the boundaries of such State. Such application shall specify with particularly the waters, or portions thereof, for which a complete prohibition is desired. The application shall include identification of water recreational areas, drinking water intakes, aquatic sanctuaries, identifiable fish-spawning and nursery areas, and areas of intensive boating activities. If, on the basis of the State's application and any other information available to him, the Administrator is unable to make a finding that the waters listed in the application require a complete prohibition of any discharge in the waters or portions thereof covered by the application, he shall state the reasons why he cannot make such a finding, and shall deny the application. If the Administrator makes a finding that the waters listed in the application require a complete prohibition of any discharge in all or any part of the waters or portions thereof covered by the State's application, he shall publish notice of such findings together with a notice of proposed rule making, and then shall proceed in accordance with 5 U.S.C. 553. If the Administrator's finding is that applicable water quality standards require a complete prohibition covering a more restricted or more expanded area than that applied for by the State, he shall state the reasons why his finding differs in scope from that requested in the State's application.

(3241) (1) For the following waters the discharge from a vessel of any sewage (whether treated or not) is completely prohibited pursuant to CWA section 312(f)(4)(A):

(3242) (i) Boundary Waters Canoe Area, formerly designated as the Superior, Little Indian Sioux, and Caribou Roadless Areas, in the Superior National Forest, Minnesota, as described in 16 U.S.C. 577–577d1.

(3243) (ii) Waters of the State of Florida within the boundaries of the Florida Keys National Marine Sanctuary as delineated on a map of the Sanctuary at http://www.fknms.nos.noaa.gov/.

(3244) (c)(1) Prohibition pursuant to CWA section 312(f)(4)(B): A State may make written application to the Administrator of the Environmental Protection Agency under section 312(f)(4)(B) of the Act for the issuance of a regulation establishing a drinking water intake no-discharge zone which completely prohibits discharge from a vessel of any sewage, whether treated or untreated, into that zone in particular waters, or portions thereof, within such State. Such application shall:

(3245) (i) Identify and describe exactly and in detail the location of the drinking water supply intake(s) and the community served by the intake(s), including average and maximum expected amounts of inflow;

(3246) (ii) Specify and describe exactly and in detail, the waters, or portions thereof, for which a complete prohibition is desired, and where appropriate, average, maximum and low flows in million gallons per day (MGD) or the metric equivalent;

(3247) (iii) Include a map, either a USGS topographic quadrant map or a NOAA nautical chart, as applicable, clearly marking by latitude and longitude the waters or portions thereof to be designated a drinking water intake zone; and

(3248) (iv) Include a statement of basis justifying the size of the requested drinking water intake zone, for example, identifying areas of intensive boating activities.

(3249) (2) If the Administrator finds that a complete prohibition is appropriate under this paragraph, he or she shall publish notice of such finding together with a notice of proposed rulemaking, and then shall proceed in accordance with 5 U.S.C. 553. If the Administrator's finding is that a complete prohibition covering a more restricted or more expanded area than that applied for by the State is appropriate, he or she shall also include a statement of the reasons why the finding differs in scope from that requested in the State's application.

(3250) (3) If the Administrator finds that a complete prohibition is inappropriate under this paragraph, he or she shall deny the application and state the reasons for such denial.

(3251) (4) For the following waters the discharge from a vessel of any sewage, whether treated or not, is completely prohibited pursuant to CWA section 312(f)(4)(B):

(3252) (i) Two portions of the Hudson River in New York State, the first is bounded by an east-west line through the most northern confluence of the Mohawk River which will be designated by the Troy-Waterford Bridge (126th Street Bridge) on the south and Lock 2 on the north, and the second of which is bounded on the north by the southern end of Houghtaling Island and on the south by a line between the Village of Roseton on the western shore and Low Point on the eastern shore in the vicinity of Chelsea, as described in Items 2 and 3 of 6 NYCRR Part 858.4.

(3253) (ii) [Reserved]

**§140.5 Analytical procedures.**

(3254) In determining the composition and quality of effluent discharge from marine sanitation devices, the procedures contained in 40 CFR part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants," or subsequent revisions or amendments thereto, shall be employed.

# TITLE 50–WILDLIFE AND FISHERIES

## Part 222–General Endangered and Threatened Marine Species

## Subpart A–Introduction and General Provisions

### §222.101 Purpose and scope of regulations.

(3255) (a) The regulations of parts 222, 223, and 224 of this chapter implement the Endangered Species Act (Act), and govern the taking, possession, transportation, sale, purchase, barter, exportation, importation of, and other requirements pertaining to wildlife and plants under the jurisdiction of the Secretary of Commerce and determined to be threatened or endangered pursuant to section 4(a) of the Act. These regulations are implemented by the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce. This part pertains to general provisions and definitions. Specifically, parts 223 and 224 pertain to provisions to threatened species and endangered species, respectively. Part 226 enumerates designated critical habitat for endangered and threatened species. Certain of the endangered and threatened marine species enumerated in §§224.102 and 223.102 are included in Appendix I or II to the Convention on International Trade of Endangered Species of Wild Fauna and Flora. The importation, exportation, and re-exportation of such species are subject to additional regulations set forth at 50 CFR part 23, chapter I.

(3256) (b) For rules and procedures relating to species determined to be threatened or endangered under the jurisdiction of the Secretary of the Interior, see 50 CFR parts 10 through 17. For rules and procedures relating to the general implementation of the Act jointly by the Departments of the Interior and Commerce and for certain species under the joint jurisdiction of both the Secretaries of the Interior and Commerce, see 50 CFR Chapter IV. Marine mammals listed as endangered or threatened and subject to these regulations may also be subject to additional requirements pursuant to the Marine Mammal Protection Act (for regulations implementing that act, see 50 CFR part 216).

(3257) (c) No statue or regulation of any state shall be construed to relieve a person from the restrictions, conditions, and requirements contained in parts 222, 223, and 224 of this chapter. In addition, nothing in parts 222, 223, and 224 of this chapter, including any permit issued pursuant thereto, shall be construed to relieve a person from any other requirements imposed by a statute or regulation of any state or of the United States, including any applicable health, quarantine, agricultural, or customs laws or regulations, or any other National Marine Fisheries Service enforced statutes or regulations.

## Part 224–Endangered Marine and Anadromous Species

### §224.103 Special prohibitions for endangered marine mammals.

(3258) (c) Approaching right whales –

(3259) (1) Prohibitions. Except as provided under paragraph (c)(3) of this section, it is unlawful for any person subject to the jurisdiction of the United States to commit, attempt to commit, to solicit another to commit, or cause to be committed any of the following acts:

(3260) (i) Approach (including by interception) within 500 yards (460 m) of a right whale by vessel, aircraft, or any other means;

(3261) (ii) Fail to undertake required right whale avoidance measures specified under paragraph (c)(2) of this section.

(3262) (2) Right whale avoidance measures. Except as provided under paragraph (c)(3) of this section, the following avoidance measures must be taken if within 500 yards (460 m) of a right whale:

(3263) (i) If underway, a vessel must steer a course away from the right whale and immediately leave the area at slow safe speed.

(3264) (ii) An aircraft must take a course away from the right whale and immediately leave the area at a constant airspeed.

(3265) (3) Exceptions. The following exceptions apply to this section, but any person who claims the applicability of an exception has the burden of proving that the exception applies:

(3266) (i) Paragraphs (c)(1) and (c)(2) of this section do not apply if a right whale approach is authorized by the National Marine Fisheries Service through a permit issued under part 222, subpart C, of this chapter (General Permit Procedures) or through a similar authorization.

(3267) (ii) Paragraphs (c)(1) and (c)(2) of this section do not apply where compliance would create an imminent and serious threat to a person, vessel, or aircraft.

(3268) (iii) Paragraphs (c)(1) and (c)(2)of this section do not apply when approaching to investigate a right whale entanglement or injury, or to assist in the disentanglement or rescue of a right whale, provided that permission is received from the National Marine Fisheries Service or designee prior the approach.

(3269) (iv) Paragraphs (c)(1) and (c)(2) of this section do not apply to an aircraft unless the aircraft is conducting whale watch activities.

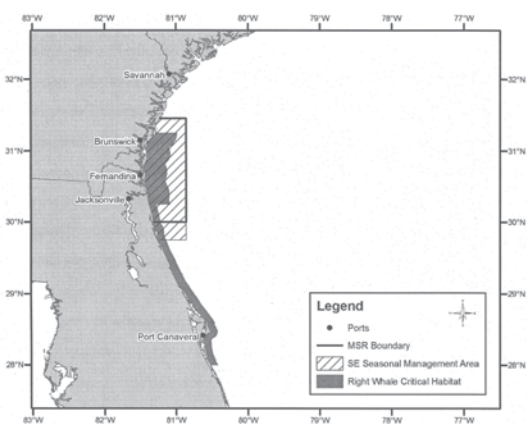
(3270) (v) Paragraph (c)(2) of this section does not apply to the extent that a vessel is restricted in her ability to maneuver and, because of the restriction, cannot comply with paragraph (c)(2) of this section.

**§224.105 Speed restrictions to protect North Atlantic Right Whales.**

(3271) (a) The following restrictions apply to: All vessels greater than or equal to 65 ft (19.8 m) in overall length and subject to the jurisdiction of the United States, and all other vessels greater than or equal to 65 ft (19.8 m) in overall length entering or departing a port or place subject to the jurisdiction of the United States. These restrictions shall not apply to U.S. vessels owned or operated by, or under contract to, the Federal Government. This exemption extends to foreign sovereign vessels when they are engaging in joint exercises with the U.S. Department of the Navy. In addition, these restrictions do not apply to law enforcement vessels of a State, or political subdivision thereof, when engaged in law enforcement or search and rescue duties.

(3272) (1) Southeast U.S. (south of St. Augustine, FL to north of Brunswick, GA): Vessels shall travel at a speed of 10 knots or less over ground during the period of November 15 to April 15 each year in the area bounded by the following: Beginning at 31°27'00.0"N., 80°51'36.0"W.; thence west to charted mean high water line then south along charted mean high water line and inshore limits of COLREGS limit to a latitude of 29°45'00.0"N., thence east to 29°45'00.0"N., 80°51'36.0"W.; thence back to starting point. (Fig. 1).

Figure 1. Southeast United States.




(3273) (2) Mid-Atlantic U.S. (from north of Brunswick, Georgia to Rhode Island): Vessels shall travel 10 knots or less over ground in the period November 1 to April 30 each year:

(3274) (i) In the area bounded by the following: 33°56'42.0"N., 77°31'30.0"W.; thence along a NW bearing of **313.26°** True to charted mean high water line then south along mean high water line and inshore limits of COLREGS limit to a latitude of 31°27'00.0"N.; thence east to

(3275) 31°27'00.0"N., 80°51'36.0"W.; thence to

(3276) 31°50'00.0"N., 80°33'12.0"W.; thence to

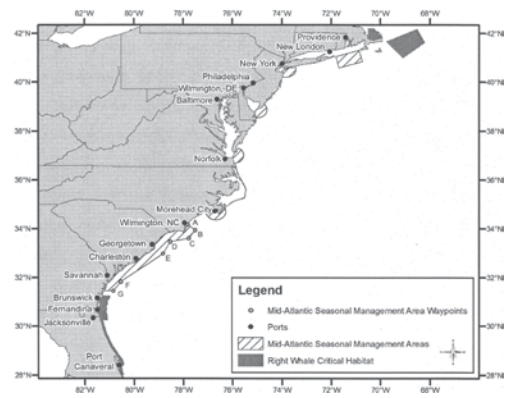
(3277) 32°59'06.0"N., 78°50'18.0"W.; thence to

(3278) 33°28'24.0"N., 78°32'30.0"W.; thence to

(3279) 33°36'30.0"N., 77°47'06.0"W.; thence back to starting point.;

(3280) (ii) Within a 20-nm (37 km) radius (as measured seaward from COLREGS delineated coast lines and the center point of the port entrance) (Fig. 2) at the

Figure 2. Mid-Atlantic United States.




(3281) (A) Ports of New York/New Jersey:

(3282) 40°29'42.2"N., 73°55'57.6"W.;

(3283) (B) Delaware Bay (Ports of Philadelphia and Wilmington): 38°52'27.4"N., 75°01'32.1"W.;

(3284) (C) Entrance to the Chesapeake Bay (Ports of Hampton Roads and Baltimore): 37°00'36.9"N., 75°57'50.5"W.; and

(3285) (D) Ports of Morehead City and Beaufort, NC: 34°41'32.0"N., 76°40'08.3"W.; and

(3286) (iii) In Block Island Sound, in the area bounded by the following coordinates: Beginning at

(3287) 40°51'53.7"N., 70°36'44.9"W.; thence to

(3288) 41°20'14.1"N., 70°49'44.1"W.; thence to

(3289) 41°04'16.7"N., 71°51'21.0"W.; thence to

(3290) 40°35'56.5"N., 71°38'25.1"W.; thence back to starting point. (Fig. 2).

(3291) (3) Northeast U.S. (north of Rhode Island):

(3292) (i) In Cape Cod Bay, MA: Vessels shall travel at a speed of 10 knots or less over ground during the period of January 1 to May 15 in Cape Cod Bay, in an area beginning at 42°04'56.5"N., 70°12'00.0"W.; thence north to 42°12'00.0"N., 70°12'00.0"W.; thence due west to charted mean high water line; thence along charted mean high water within Cape Cod Bay back to beginning point. (Fig. 3).

(3293) (ii) Off Race Point: Vessels shall travel at a speed of 10 knots or less over ground during the period of March 1 to April 30 each year in waters bounded by straight lines connecting the following points in the order stated (Fig. 3):

(3294) 42°30'00.0"N., 69°45'00.0"W.; thence to

(3295) 42°30'00.0"N., 70°30'00.0"W.; thence to

(3296) 42°12'00.0"N., 70°30'00.0"W.; thence to

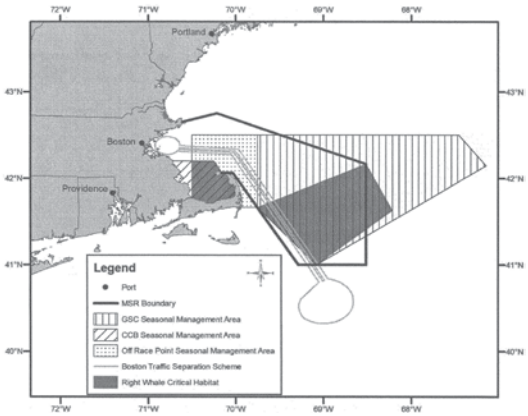
(3297) 42°12'00.0"N., 70°12'00.0"W.; thence to

(3298) 42°04'56.5"N., 70°12'00.0"W.; thence along charted mean high water line and inshore limits of COLREGS

limit to a latitude of 41°40'00.0"N., thence due east to 41°41'00.0"N., 69°45'00.0"W.; thence back to starting point.

(3299) (iii) Great South Channel: Vessels shall travel at a speed of 10 knots or less over ground during the period of April 1 to July 31 each year in all waters bounded by straight lines connecting the following points in the order stated (Fig. 3):

Figure 3. Northeast United States.




(3300) 42°30'00.0"N., 69°45'00.0"W.

(3301) 41°40'00.0"N., 69°45'00.0"W.

(3302) 41°00'00.0"N., 69°05'00.0"W.

(3303) 42°09'00.0"N., 67°08'24.0"W.

(3304) 42°30'00.0"N., 67°27'00.0"W.

(3305) 42°30'00.0"N., 69°45'00.0"W.

(3306) (b) Except as noted in paragraph (c) of this section, it is unlawful under this section:

(3307) (1) For any vessel subject to the jurisdiction of the United States to violate any speed restriction established in paragraph (a) of this section; or

(3308) (2) For any vessel entering or departing a port or place under the jurisdiction of the United States to violate any speed restriction established in paragraph (a) of this section.

(3309) (c) A vessel may operate at a speed necessary to maintain safe maneuvering speed instead of the required ten knots only if justified because the vessel is in an area where oceanographic, hydrographic and/or meteorological conditions severely restrict the maneuverability of the vessel and the need to operate at such speed is confirmed by the pilot on board or, when a vessel is not carrying a pilot, the master of the vessel. If a deviation from the ten-knot speed limit is necessary, the reasons for the deviation, the speed at which the vessel is operated, the latitude and longitude of the area, and the time and duration of such deviation shall be entered into the logbook of the vessel. The master of the vessel shall attest to the accuracy of the logbook entry by signing and dating it.

(3310) (d) This final rule expires on December 9, 2013.

## Part 226–Designated Critical Habitat

### §226.101 Purpose and scope.

(3311) The regulations contained in this part identify those habitats designated by the Secretary of Commerce as critical under section 4 of the Act, for endangered and threatened species under the jurisdiction of the Secretary of Commerce. Those species are enumerated at §223.102 of this chapter, if threatened and at Sec. 224.101 of this chapter, if endangered. For regulations pertaining to the designation of critical habitat, see part 424 of this title, and for regulations pertaining to prohibition against the adverse modification or destruction of critical habitat, see part 402 of this title. Maps and charts identifying designated critical habitat that are not provided in this section may be obtained upon request to the Office of Protected Resources (see §222.102, definition of "Office of Protected Resources").

### §226.203 Critical habitat for northern right whales.

(3312) (a) Great South Channel. The area bounded by

(3313) 41°40'N., 69°45'W.;

(3314) 41°00'N., 69°05'W.;

(3315) 41°38'N., 68°13'W.; and

(3316) 42°10'N., 68°31'W.;

(3317) (b) Cape Cod Bay, Massachusetts. The area bounded by

(3318) 42°04.8'N., 70°10'W.;

(3319) 42°12'N., 70°15'W.;

(3320) 42°12'N., 70°30'W.;

(3321) 41°46.8'N., 70°30'W. and on the south and east by the interior shore line of Cape Cod, Massachusetts.

(3322) (c) Southeastern United States. The coastal waters between 31°15'N and 30°15'N from the coast out 15 nautical miles; and the coastal waters between 30°15'N and 28°00'N from the coast out 5 nautical miles.

# Cape Henry to Key West

(1) The Atlantic Coast of the United States from Cape Henry to Cape Florida is low and sandy, backed by woods. From Cape Florida to Key West the coast is formed by a long chain of small islands known as the Florida Keys. The Florida Reefs extend seaward of the keys and are nearly parallel to them.

(2) The coastline of Virginia from Cape Henry southward to the boundary of North Carolina is firm land for 13 miles; then it becomes a barrier beach, covered with sand dunes for 11 miles. The boundary between Virginia and North Carolina is the only marked boundary on this section of the coast. The easternmost boundary monument is a granite shaft 6 feet high about 0.5 mile west of the beach.

(3) The coastline of North Carolina is a long barrier beach. The islands are known as the **Outer Banks.** The banks are constantly shifting sand dunes varying in height. Three capes, with their offshore shoals, project from the islands, namely: Hatteras, Lookout, and Fear. Behind the barrier beach a chain of sounds, including Currituck, Roanoke, Albemarle, Pamlico, Core, and Bogue, stretch along the entire 300 miles of coastline of the State.

(4) Bordering the sounds on the mainland is a belt from 30 to 80 miles wide, where the land is level and sometimes swampy. On the north a portion of the Great Dismal Swamp spreads across the border of Virginia into North Carolina. Between Albemarle Sound and Pamlico River the swamplands are locally known as **Dismals** and **Pocosins**. They occur on the divides or watersheds between the rivers and sounds. In the southeast section of North Carolina are the **Savannas**, treeless prairie land with a thick growth of grass and wild flowers; they have been formed by a lack of drainage and a close impervious soil.

(5) The coastline of South Carolina from Little River Inlet to Winyah Bay is practically an unbroken beach. Cape Romain, just south of Winyah Bay, and the shoal extending seaward from it, form the southern point of indentations which has its northern point at Cape Fear. From Winyah Bay to Savannah River, the boundary between South Carolina and Georgia, the coastline is a border of sandy barrier islands. The large sounds so characteristic of the North Carolina coast are missing.

(6) The coastline of Georgia between Savannah River on the north and St. Marys River on the south is partly submerged at flood tide, and is broken by tidal rivers and marshes covered with dense grasses. The most important sandy islands off the coast are Tybee, Wassaw, Ossabaw, St. Catherines, Sapelo, St. Simons, Jekyll, and Cumberland.

(7) The coastline of Florida is a long, low, barrier beach from the border of Georgia south to Cape Florida. Many of the leading tourist resorts have been built on this beach, while the business districts are often on the mainland.

(8) Under the sand and the lagoons is a limestone called **Coquina**, which is soft while in its native state, but becomes a hard building stone when exposed to the air.

(9) Below Cape Florida the Florida Keys and Florida Reefs extend for about 134 miles in a southwesterly curve to Sand Key Light, and about 58 miles in a westerly direction to Loggerhead Key. These keys and reefs are of sand, shell, and coral formation. The keys are generally low and covered with mangrove.

### Disposal Sites and Dumping Grounds

(10) These areas are rarely mentioned in the Coast Pilot, but are shown on the nautical charts. (See Dump Sites and Dumping Grounds, chapter 1, and charts for limits.)

### Aids to navigation

(11) Lights are on or near the dangerous capes, at the entrance to the harbors, and along the Florida Reefs. The critical dangers are buoyed. Radar, though always a valuable navigational aid, is generally of less assistance in navigation along this coast due to the relatively low relief; the accuracy of radar ranges to the beach cannot be relied upon. Coastal buoys equipped with radar reflectors are of help in this regard. It is sometimes possible to obtain a usable radar return from the larger lighthouses, but positive target identification is usually difficult. There are numerous aerolights along the coast that are useful for navigation, but they should not be confused with the marine lights.

### COLREGS Demarcation Lines

(12) Lines have been established to delineate those waters upon which mariners must comply with the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) and those waters upon which mariners must comply with the Inland Navigation Rules Act of 1980 (Inland Rules). The waters inside of the lines are **Inland Rules Waters**, and the waters outside of the lines are **COLREGS Waters**. (See **Part 80**, chapter 2, for specific lines of demarcation.)

### Ports and Waterways Safety

(13) (See **Part 160**, chapter 2, for regulations governing vessel operations and requirements for notification of arrivals, departures, hazardous conditions, and certain dangerous cargoes to the Captain of the Port.)

### Harbor entrances

(14) The entrance to every harbor on this stretch of the coast is more or less obstructed by a shifting sandbar over which the channel depth is changeable. The entrance channels of the larger and more important harbors have been improved by dredging; in some cases jetties have been built from both sides of the entrance. Many of the dredged channels in this area have a tendency to shoal soon after dredging because of the shifting sandy bottom.

(15) The buoys on many of the bars are not charted because they are moved from time to time to indicate the changing channel. They are liable to be dragged out of position and cannot always be replaced immediately, so a stranger must use the greatest caution. If possible, a stranger should enter a harbor or inlet on a rising tide.

(16) The tidal currents have considerable velocity in all of the entrances, and their direction is affected by the force and direction of the wind; sailing vessels entering the harbors and sounds require a fair working breeze during the ebb.

(17) Strangers should not attempt to enter the harbors without the assistance of a pilot during easterly gales when the sea breaks on most of the bars.

### Depths

(18) Between Cape Henry and Jupiter Inlet frequent soundings will give the mariner timely warning of his approach to the land from seaward.

(19) Northward of Cape Hatteras the 20-fathom curve is from 13 to 45 miles offshore, but inside of 15 fathoms the depths are irregular and many holes of limited extent are inside the general limits of corresponding depths; 10 to 14 fathoms are found in places only 1.5 miles offshore. This irregularity of depth is apt to confuse the mariner and lead him into danger in thick weather; the greatest caution should therefore be used inside of a depth of 20 fathoms. By keeping over 6 miles from the beach all dangers will be avoided, but the strong currents which sometimes set along the shore must be considered, especially after a gale.

(20) Southeastward of Cape Hatteras, and off the end of the shoals which extend seaward about 8 miles, the 20-fathom curve is from 12 to 15 miles offshore, and the 30-fathom curve is only a short distance farther. In thick weather, soundings of 20 fathoms or less should warn the mariner to keep offshore.

(21) From Cape Hatteras to Jupiter Inlet, the 20-fathom curve is fairly regular and for a greater part of the distance is from 40 to 55 miles offshore. Northward of St. Johns River, the water shoals uniformly to the 10-fathom curve, which, excepting in the two great bights between Cape Hatteras and Cape Fear, is from 10 to 30 miles offshore. Vessels bound for any of the harbors between Cape Fear and St. Johns River should approach the land with caution when in 10 fathoms of water; inside the 10-fathom curve depths are irregular and spots of 5 fathoms or less will be found from 6 to 12 miles offshore. In thick weather vessels standing along the coast should keep a general depth of 10 fathoms between Cape Fear and St. Johns River.

(22) In a heavy sea, depths of less than 6 fathoms show discolored water; deep-draft vessels should be cautious about passing over such spots.

(23) Southward of St. Johns River, the 20-fathom curve draws inshore gradually and at Jupiter Inlet is only 4 miles from the beach, and the 100-fathom curve a little over 8 miles. Southward of Jupiter Inlet, both curves draw closer inshore, and along the Florida Reefs the 20-fathom curve is close in to the reefs, while the 100-fathom curve is at an average distance of about 7 miles outside the reefs. The 10-fathom curve between St. Johns River and Jupiter Inlet is irregular and of no use in determining distance from shore. Approaching Florida Reefs southward of Jupiter Inlet, soundings are of little use unless taken frequently as the water shoals rapidly from seaward.

(24) In the approach to the Bahama Banks along the Straits of Florida, the discolored water is the best indication the mariner has to warn him of shoal water; the 100-fathom curve at some points is only 1 or 2 miles from the shoal water of the banks.

### Tropical waters

(25) The most remarkable feature is the exceeding clarity of the sea water, enabling the bottom to be seen from aloft at considerable depths and at some distance. The navigation of the banks is consequently conducted almost entirely by the eye, but care must be taken not to run with the sun ahead of the vessel as that prevents the banks from being seen.

(26) The charts indicate clearly the positions of the many shoal heads, but considerable experience is required in identifying the patches by the color of the water. Small clouds, moving slowly and known to the pilots as **Flyers**, are apt to deceive the inexperienced, their reflection on the surface of the sea over the clear white sandy bottom has every appearance of rocky shoals. It is prudent to avoid a dark spot.

(27) **Bank Blink** is a phenomenon in tropical waters described as a bright reflected light hanging over the clear white sandbanks, serving to point them out from a considerable distance. From experience, it has been found to be untrustworthy, however, and should not be depended on in place of a lookout aloft. Soundings, dead reckoning, and fixes should be carefully checked and evaluated.

### Anchorages

(28) Vessels may find refuge at a number of places along the coast according to draft. The more important places are Lookout Bight, Beaufort Inlet, Cape Fear River, Winyah Bay, Charleston Harbor, Port Royal Sound, Savannah River, Sapelo Sound, St. Simons Sound, Cumberland Sound, St. Johns River, Fort Pierce Inlet, Lake Worth Inlet, Port Everglades, Miami, and Key West. A number of anchorage areas have been established by Federal regulations within the area of this Coast Pilot. (See **Part 110**, chapter 2, for limits and regulations.)

### Dangers

(29) Along the coast are a number of wrecks that are obstructions to navigation. Most of the dangerous wrecks are marked with lighted buoys. A careful check should be made of the chart to ensure that dangerous wrecks are not along the routes selected.

(30) Trawlers or other vessels should exercise caution while dragging the ocean floor within a 25-mile radius of Cape Canaveral, Fla., since it is known that missile debris exist in the area, some of which may contain unexploded ordnance.

(31) Mariners are also cautioned against possible hazards of a weather rocket impact area that extends more than 50 miles offshore at Cape Canaveral, Fla. Falling rocket casings may be hazardous during the hours of 1930-2100 e.s.t., Monday through Friday.

### Pipelaying barges

(32) With the increased number of pipeline laying operations, operators of all types of vessels should be aware of the dangers of passing close aboard, close ahead, or close astern of a jetbarge or pipelaying barge. Pipelaying barges and jetbarges usually move at 0.5 knot or less and have anchors which extend out about 3,500 to 5,000 feet in all directions and which may be marked by lighted anchor buoys. The exposed pipeline behind the pipelaying barge and the area in the vicinity of anchors are hazardous to navigation and should be avoided. The pipeline and anchor cables also represent a submerged hazard to navigation. It is suggested, if safe navigation permits, for all types of vessels to pass well ahead of the pipelaying barge or well astern of the jetbarge. The pipelaying barge, jetbarge, and attending vessels may be contacted on VHF-FM channel 16 for passage instructions.

(33) **Danger zones** have been established within the area of this Coast Pilot. (See **Part 334**, chapter 2, for limits and regulations.) Submarine operating areas and transit lanes are off the North and South Carolina coasts. The areas are shown on the charts.

### Drawbridges

(34) The general regulations that apply to all drawbridges are given in **117.1 through 117.49**, chapter 2, and the specific regulations that apply only to certain drawbridges are given in **Part 117**, Subpart B, chapter 2. Where these regulations apply, references to them are made in the Coast Pilot under the name of the bridge or the waterway over which the bridge crosses.

(35) The drawbridge opening signals (see **117.15**, chapter 2) have been standardized for most drawbridges within the United States. The opening signals for those few bridges that are nonstandard are given in the specific drawbridge regulations. The specific regulations also address matters such as restricted operating hours and required advance notice for openings.

(36) The mariner should be acquainted with the general and specific regulations for drawbridges over waterways to be transited.

(37) The chapters that follow may contain references to Federally-designated Marine Protected Areas (MPAs) occurring in navigable coastal waters of the SE Atlantic coast. The critical environmental information is intended to inform readers about the location, purpose, and legal restrictions of coastal MPAs, with an emphasis on activities of interest to the maritime community. (Extensive MPAs are listed here. Regional MPAs are included in subsequent chapters of this Coast Pilot.)

### Area to Be Avoided

(38) The **Area to Be Avoided Off the Coast of Florida** (ATBAOCF) has been established. The ATBAOCF has been established in order to reduce the risk of large vessel groundings which are found to constitute a serious threat to the continued vitality of the marine environment of the Florida Keys. The ATBAOCF has been established under the authority of the Florida Keys National Marine Sanctuary and Protection Act, Public Law 101-605 (November 16, 1990). The ATBAOCF has also been adopted by the International Maritime Organization (IMO), effective November 16, 1991.

(39) Operation of tank vessels and vessels greater than 50 meters (164 feet) in length is prohibited within the ATBAOCF. The term "tank vessel" is defined to mean "a vessel that is constructed or adapted to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue"; 46 U.S.C. subpart 2101(39).

(40) Consistent with generally recognized principles of international law, and National Oceanic and Atmospheric Administration (NOAA)'s jurisdiction under section 307 of the Marine Protection Research and Sanctuaries Act, 16 U.S.C. subpart 1437, enforcement actions may include assessment of civil penalties of not more than $50,000 per violation. The above prohibition does not apply to necessary operations of public vessels, including operations essential for national defense, law enforcement, and responses to emergencies that threaten life, property, or the environment.

(41) The ATBAOCF is coterminous with the boundaries of the Florida Keys National Marine Sanctuary. The sections (four) of the ATBAOCF are defined by the following groups of co-ordinates.

(42) In order to avoid risk of pollution and damage to the environment of this sensitive area, all vessels with

cargoes of oil and hazardous materials, and all vessels greater than 50 meters (164 feet) in length should avoid the area bounded by a line connecting the following points.

**In the Vicinity of the Florida Keys**

(43) Reference NOS charts 11450 and 11466.
(44) (1) 25°45.00'N., 080°06.10'W.
(45) (2) 25°38.70'N., 080°02.70'W.
(46) (3) 25°22.00'N., 080°03.00'W.
(47) (4) 25°06.35'N., 080°10.47'W.
(48) (5) 24°56.35'N., 080°19.25'W.
(49) (6) 24°37.90'N., 080°47.30'W.
(50) (7) 24°29.20'N., 081°17.30'W.
(51) (8) 24°22.30'N., 081°43.17'W.
(52) (9) 24°28.00'N., 081°43.17'W.
(53) (10) 24°28.70'N., 081°43.50'W.
(54) (11) 24°29.80'N., 081°43.17'W.
(55) (12) 24°33.10'N., 081°35.15'W.
(56) (13) 24°33.60'N., 081°26.00'W.
(57) (14) 24°38.20'N., 081°07.00'W.
(58) (15) 24°43.20'N., 080°53.20'W.
(59) (16) 24°46.10'N., 080°46.15'W.
(60) (17) 24°51.10'N., 080°37.10'W.
(61) (18) 24°57.50'N., 080°27.50'W.
(62) (19) 25°09.90'N., 080°16.20'W.
(63) (20) 25°24.00'N., 080°09.10'W.
(64) (21) 25°31.50'N., 080°07.00'W.
(65) (22) 25°39.70'N., 080°06.85'W.
(66) (23) 25°45.00'N., 080°06.10'W.

**In the Vicinity of Key West Harbor**

(67) Reference NOS chart 11434.
(68) (24) 24°27.95'N., 081°48.65'W.
(69) (25) 24°23.00'N., 081°53.50'W.
(70) (26) 24°26.60'N., 081°58.50'W.
(71) (27) 24°27.75'N., 081°55.70'W.
(72) (28) 24°29.35'N., 081°50.00'W.
(73) (29) 24°27.95'N., 081°48.65'W.

**Area Surrounding the Marquesas Keys**

(74) Reference NOS chart 11434. (The Marquesas Keys are discussed in United States Coast Pilot 5.)
(75) (30) 24°26.60'N., 081°59.55'W.
(76) (31) 24°23.00'N., 082°03.50'W.
(77) (32) 24°23.60'N., 082°27.80'W.
(78) (33) 24°34.50'N., 082°37.50'W.
(79) (34) 24°43.00'N., 082°26.50'W.
(80) (35) 24°38.31'N., 081°54.06'W.
(81) (36) 24°37.91'N., 081°53.40'W.
(82) (37) 24°36.15'N., 081°51.78'W.
(83) (38) 24°34.40'N., 081°50.60'W.
(84) (39) 24°33.44'N., 081°49.73'W.
(85) (40) 24°31.20'N., 081°52.10'W.
(86) (41) 24°28.70'N., 081°56.80'W.
(87) (42) 24°26.60'N., 081°59.55'W.

**Area Surrounding Dry Tortugas**

(88) Reference NOS chart 11434.
(89) (43) 24°32.00'N., 082°53.50'W.
(90) (44) 24°32.00'N., 083°00.05'W.
(91) (45) 24°39.70'N., 083°00.05'W.
(92) (46) 24°45.60'N., 082°54.40'W.
(93) (47) 24°45.60'N., 082°47.02'W.
(94) (48) 24°42.80'N., 082°43.90'W.
(95) (49) 24°39.50'N., 082°43.90'W.
(96) (50) 24°35.60'N., 082°46.40'W.
(97) (51) 24°32.00'N., 082°53.50'W.

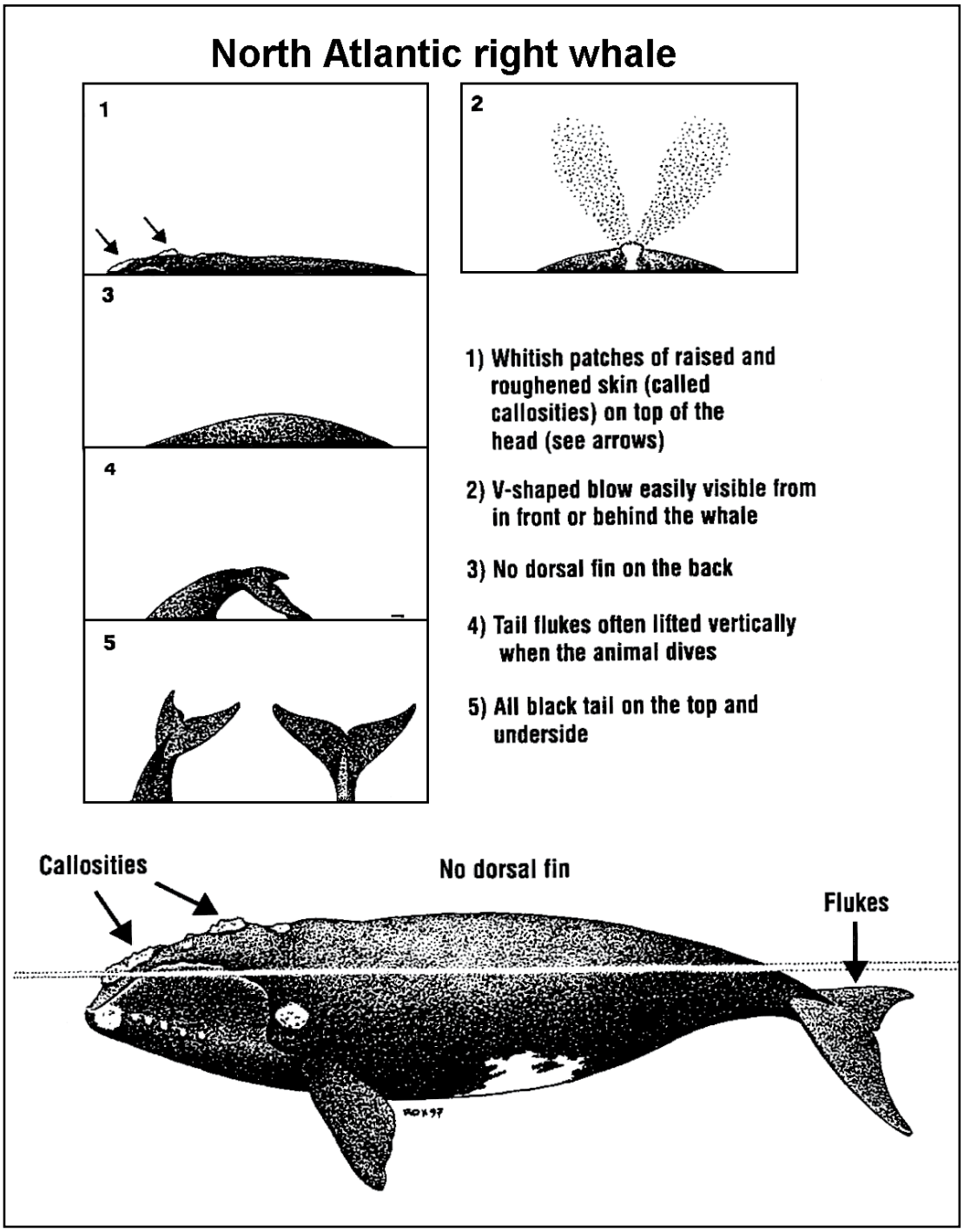
(98) The **Dry Tortugas** are a group of small keys and reefs 63 miles W from Key West. The group is about 11 miles long, in a NE-SW direction, and 6 miles wide. **Pulaski Shoal**, at the NE end of the group, is 12 miles NW of Rebecca Shoal. **Pulaski Shoal Light** (24°41'36"N., 82°46'23"W.), 56 feet above the water, is shown from a small black house on a hexagonal pyramidal skeleton tower on piles on the E side of the shoal.

(99) The keys are low and irregular, and have a thin growth of mangrove. In general, they rise abruptly from deep water and have fairly good channels between them. They are continually changing in size and shape. (Dry Tortugas is described in United States Coast Pilot 5.)

**North Atlantic Right Whales**

(100) The North Atlantic right whale is one of the world's most endangered large whale species. North Atlantic right whales are found primarily in continental shelf waters between Florida and Nova Scotia. They migrate annually along the east coast between the feeding grounds off New England and Canada and the calving grounds off Florida, Georgia and South Carolina. Because right whales mate, rest, feed and nurse their young at the surface, and often do not move out of the way of oncoming ships, they are highly vulnerable to being struck. Pregnant females and females with nursing calves appear to be particularly vulnerable to collisions with ships. Ship strikes and fishing gear entanglements are the two known sources of human-related mortality. Intentionally approaching within 500 yards of right whales is prohibited and is a violation of federal law. (See **50 CFR 224.103**, chapter 2 for limits, regulations and exceptions.)

(101) **Description of North Atlantic right whale:** Right whales are large baleen whales. Adults are generally 45 to 55 feet in length and can weigh up to 70 tons. The body is mostly black, but irregularly shaped white patches may be present on the ventral surface. The best field identification marks are a broad back with no dorsal fin, irregular bumpy white patches (callosities) on the head, and a distinctive two-column V-shaped blow when viewed from directly behind or in front of the whale. The whales have broad, paddle-shaped flippers and a broad, deeply notched tail. (See following diagrams and photographs.) Right whales are slow moving and seldom travel faster than 5 or 6 knots. They can stay submerged for 10 to 20 minutes and may appear


North Atlantic right whale
1
2
3
4
5
1) Whitish patches of raised and roughened skin (called callosities) on top of the head (see arrows)
2) V-shaped blow easily visible from in front or behind the whale
3) No dorsal fin on the back
4) Tail flukes often lifted vertically when the animal dives
5) All black tail on the top and underside
Callosities
No dorsal fin
Flukes

Images courtesy of Center for Coastal Studies

suddenly when surfacing to breathe. They are often seen alone or in small groups. At times, right whales form large courtship groups of 20 to 30 animals.

(102) **Seasonal occurrence of North Atlantic right whales:** During seasons and in areas where right whales may occur, vessel operators should maintain a sharp lookout for whales and reduce speeds when consistent with safe navigation. In any given year oceanographic variability may affect the seasonal distribution of right whales. In 1986, right whales were frequently sighted within the Stellwagen Bank National Marine Sanctuary throughout the summer, and in the early spring of 1998 a large number of right whales were documented near the Narragansett/Buzzards Bay Traffic Separation Scheme. Three areas in U.S. waters have been designated as critical habitats for North Atlantic right whales. The northern critical habitats, the Great South Channel (east of Cape Cod) and Cape Cod Bay extending into Massachusetts Bay, are feeding and nursery grounds. The southern critical habitat, off coastal Florida and Georgia (Sebastian Inlet, Florida to the Altamaha River, Georgia), is a calving area. (See **50 CFR 226.203**, chapter 2 for limits, regulations and exceptions).

**Seasonal occurrence of North Atlantic right whales**

| Location | Season | Comments |
|---|---|---|
| Central Gulf of Maine (Jordan Basin, Cashes Ledge) | April-June<br>October-December | |
| Cape Cod Bay | December-May | |
| Great South Channel, northern edge of Georges Bank | March-July | |
| Bay of Fundy, Scotian Shelf (Browns Bank, Roseway Basin) | July-October | Most of the population can be found in this area during this time. |
| Jeffreys Ledge | October-December | Whales are frequently sighted in this area. |
| Stellwagen Bank National Marine Sanctuary | Year-round | Peak sightings occur in the early spring with infrequent sightings in the summer. |
| New York to North Carolina | November-April | The migration corridor between right whale habitats is within 30 miles of the Atlantic coast. |
| South Carolina, Georgia and Florida calving area | November-April | Calving right whales have been sighted as far north as Cape Fear, NC and as far south as Miami, FL with rare sightings in the Gulf of Mexico. |

(103) **Mandatory Speed Restrictions:** Vessels 65 feet or greater in length overall (L.O.A.) are subject to mandatory speed restrictions of 10 knots or less in seasonal management areas (SMA) along the U.S. East Coast during times when right whales are likely to be present (See following maps for locations of SMAs). The Northeastern SMA speed restrictions are in place from January 1 through May 15 in Cape Cod Bay, from March 1 through April 30 off Race Point, and from April 1 through July 31 in the Great South Channel. Speed restrictions in the Mid-Atlantic U.S. SMAs are in place from November 1 to April 30 and include Block Island Sound, entry into the Ports of New York/New Jersey, Delaware Bay, Entrance to Chesapeake Bay, and the Ports of Morehead City and Beaufort, NC, and within a continuous boundary approximately 20 nautical miles from shore around the major ports of Wilmington, NC, Charleston, SC and Savannah, GA. Speed restrictions are in place in the Southeastern U.S. SMA from November 15 to April 15; this area extends from shore approximately 30 nautical miles eastward and contains the major ports of Brunswick, GA, Fernandina Beach, FL and Jacksonville, FL. (See **50 CFR 224.105**, chapter 2 for regulations, limitations, and exceptions and complete description of the SMAs.) NOAA Fisheries may also establish voluntary Dynamic Management Areas (DMAs) when right whales are present in areas and times not covered by the SMAs. Information about established DMAs will be announced over NOAA's customary maritime communication media. Mariners are encouraged to avoid or reduce speeds to 10 knots or less while transiting through DMAs.

### Area to be avoided

(104) In order to significantly reduce the risk of ship strikes to the North Atlantic right whale, an area to be avoided was established in the Great South Channel, east of the Boston Harbor traffic lanes. Ships of 300 gross tons and above should avoid the area bounded by lines connecting the following geographical positions:

(105) 41°44'08"N., 69°34'50"W.;

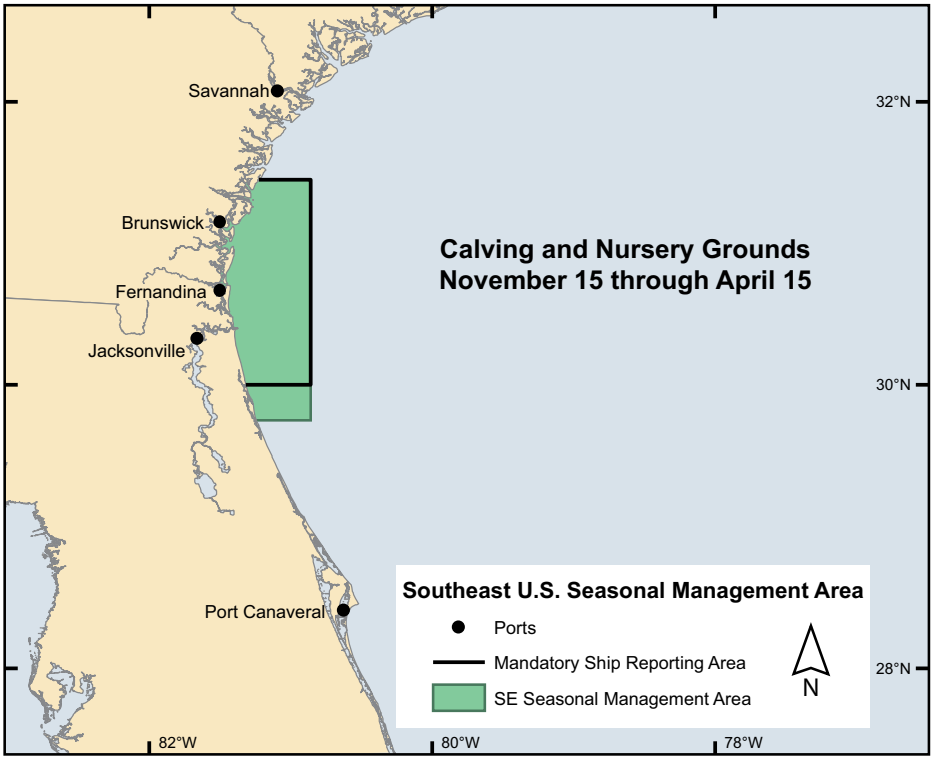
(106) 42°10'00"N., 68°31'00"W.;

(107) 41°24'53"N., 68°31'00"W.; and

(108) 40°50'28"N., 68°58'40"W. between the period of April 1 through July 31

(109) **Early Warning and Sighting Advisory Systems:** As weather and conditions permit, dedicated seasonal programs of aerial and vessel surveys are conducted in the Northeast and Southeast U.S. to provide whale sighting information to mariners. Surveys typically occur in the following locations at the specified times: a) Cape Cod Bay, the Gulf of Maine, the Great South Channel, and Rhode Island, Block Island, and Long Island Sounds from January through July; b) South Carolina/North Carolina border south to Crescent Beach, FL from December through March. Survey planes occasionally use VHF-FM channel 16 to contact ships directly if whales have been spotted in close proximity to that vessel. However, many right whales go undetected by surveys. Seasonal right whale advisories and sighting reports are broadcast periodically for these and surrounding areas by Coast Guard Broadcast Notice to Mariners, NAVTEX, NOAA Weather Radio, Cape Cod Canal Vessel Traffic Control, the Bay of Fundy Vessel Traffic Control, and are included in the return message from the Right Whale Mandatory Ship Reporting (MSR) systems. General sighting information may be obtained by sending

New London
New York
Block Island
Philadelphia
Baltimore
40°N
Migratory Route &
Calving Grounds
November 1 through April 30
Norfolk
Morehead City
35°N
Wilmington, NC
A
B
C
D
E
F
G
Charleston
Savannah
Mid-Atlantic U.S. Seasonal Management Areas
Mid-Atlantic Seasonal Management Area Waypoints
Ports
Mid-Atlantic Seasonal Management Areas
N
80°W
75°W
70°W


Savannah
32°N
Brunswick
Fernandina
Jacksonville
Calving and Nursery Grounds
November 15 through April 15
30°N
Port Canaveral
Southeast U.S. Seasonal Management Area
Ports
Mandatory Ship Reporting Area
SE Seasonal Management Area
N
28°N
82°W
80°W
78°W

an e-mail to ne.rw.sightings@noaa.gov (Northeast) or se.rw.sightings@noaa.gov (Southeast).

(110) **Precautions when transiting right whale habitat and areas of recently reported right whale sightings:** NOAA recommends the following precautionary measures be taken to avoid adverse interactions with North Atlantic right whales:

(111) Before entering right whale habitat (See "Seasonal Occurrence" table), check Coast Guard Broadcast Notices to Mariners, NAVTEX, NOAA Weather Radio, Mandatory Ship Reporting (MSR) system, Cape Cod Canal Vessel Traffic Control, the Bay of Fundy Vessel Traffic Control, as well as other sources for recent right whale sighting reports. Local ship pilots also have information on whale sightings and safe local operating procedures.

(112) Review right whale identification materials and maintain a sharp watch with lookouts familiar with spotting whales. Although right whales are large, their dark color and lack of a dorsal fin can make them difficult to spot.

(113) Avoid transiting through the right whale habitats and areas where right whales have recently been sighted. If transiting between ports within critical habitats, minimize transit distance. Route around observed or recently reported right whales and anticipate delays due to prudent seamanship in response to whale sightings. Avoid transits at night or during periods of low visibility.

(114) If a right whale is sighted from the ship or reported along the intended track of the ship, mariners should exercise caution, post a lookout and reduce speed to 10 knots when consistent with safe navigation. If a right whale is sighted, a vessel must steer a course away from the right whale and immediately leave the area at slow safe speed. Do not assume right whales will move out of the way of an approaching vessel. Mariners should keep in mind that it is illegal to approach a right whale closer than 500 yards. (See **50 CFR 224.103**, chapter 2 for limits, regulations and exceptions.)

(115) Any whale accidentally struck, dead whale carcass, and sighting of an injured or entangled whale should be reported immediately to the Coast Guard or NOAA National Marine Fisheries Service noting the precise location, date, and time of the accident or sighting. Call 978-281-9351 for reports to NOAA for the area from Virginia to Maine, or 877-433-8299 for the area from North Carolina to Florida. In the event of a strike or sighting of a dead, injured or entangled whale, the following information should be provided:

(116) location, date, and time of the accident or sighting of a carcass or an entangled whale,

(117) speed and course of the vessel,

(118) vessel specifications such as size and propulsion,

(119) water depth,

(120) environmental conditions such as visibility, wind speed and direction,

(121) description of the impact,

(122) fate of the animal, and

(123) species and size, if known.

(124) **Recommended Two-Way Routes to Avoid Whales:** To reduce the possibility of vessel strikes with right whales, Two-Way Routes were developed for vessels entering and transiting through Cape Cod Bay and arriving and departing the ports of Brunswick, GA, Fernandina Beach, FL and Jacksonville, FL. The routes were developed from an analysis of historical right whale sightings and are designed to reduce the likelihood of adverse interactions between large vessels and right whales. The routes are found on the latest NOAA Nautical Charts. In July 2007, the northern leg of the Boston Traffic Separation Scheme (TSS) was shifted to direct ship traffic away from an area of high whale density. Use of the modified TSS is expected to considerably reduce the risk of striking a whale.

(125) **Mandatory Ship Reporting Systems (MSR) WHALESNORTH and WHALESSOUTH**

(126) Mandatory Ship Reporting (MSR) systems require all vessels, 300 gross tons or greater, to report to the U.S. Coast Guard upon entering two designated reporting areas off the east coast of the United States. (See **33 CFR 169**, chapter 2, for limits and regulations.) Sovereign immune vessels are exempt from the requirement to report, but are encouraged to participate.

(127) The two reporting systems will operate independently of each other. The system in the northeastern United States will operate year round and the system in the southeastern United States will operate each year from November 15 through April 15. Reporting ships are only required to make reports when entering a reporting area during a single voyage (that is, a voyage in which a ship is in the area). Ships are not required to report when leaving a port in the reporting area nor when exiting the system.

(128) Mariners should check all MSR messages carefully before transmittal to ensure the message includes the correct address and format. Additional greeting or comments in the message will preclude message receipt by the MSR system. Failure to receive a timely return message from the MSR system that provides locations of recent right whale sightings and precautionary guidance should be reported to the local Sector Office of the U.S. Coast Guard.

(129) **Northeastern reporting system/Southeastern reporting system** (See **33 CFR 169.105 and 169.115**, chapter 2, for limits.)

(130) Vessels shall make reports in accordance with the format in IMO Resolution A.858 (20) in accordance with the International Convention for the Safety of Life at Sea 1974 (SOLAS 74). (See 33 **CFR 169.135 and 169.140**, chapter 2, for additional information.) Vessels should report via INMARSAT C or via alternate satellite communications to one of the following addresses:

(131) Email: RightWhale.MSR@noaa.gov or Telex: 48156090.

(132) Vessels not equipped with INMARSAT C or Telex should submit reports to the U.S. Coast Guard's Communication Area Master Station Atlantic (CAMSLANT)

via HF voice frequencies on 2182 kHz, 4125 kHz, 6215 kHz, 8291 kHz, 12290 kHz, and 16420 kHz or by calling 1-800-742-8519x0. Vessels equipped only with VHF-FM voice communications should submit reports to the nearest U.S. Coast Guard Sector Office.

(133) Example Reports:

(134) **WHALESNORTH**

(135) WHALESNORTH//

(136) M/487654321//

(137) A/CALYPSO/NRUS//

(138) B/031401Z APR//

(139) E/345//

(140) F/15.5//

(141) H/031410Z APR/4104N/06918W//

(142) I/BOSTON/032345Z APR//

(143) L/WP/4104N/06918W/15.5.//

(144) L/WP/4210N/06952W/15.5//

(145) L/WP/4230N/07006W/15.5//

(146) **WHALESSOUTH**

(147) WHALESSOUTH//

(148) M/412345678//

(149) A/BEAGLE/NVES//

(150) B/270810Z MAR//

(151) E/250//

(152) F/17.0//

(153) H/270810Z MAR/3030N/08052W//

(154) I/MAYPORT/271215Z MAR//

(155) L/RL/17.0//

(156) Mariners should check all MSR messages carefully before transmittal to ensure the messages include the correct address and correct format. Additional comments in the message will preclude message receipt by the MSR system. Failure to receive a timely return message from the MSR system, providing locations of recent right whale sightings and precautionary guidance, should be reported to the local Sector Office of the U.S. Coast Guard.

### Inside Navigation

(157) Navigation on the waterways covered by this volume requires a knowledge of the channel conditions and other factors restricting navigation. General items of interest to the vessel operator are indicated in the paragraphs that follow; details are given in the text.

### Speed

(158) Regulations are given in **162.65**, chapter 2.

### Bends or Curves

(159) In the Intracoastal and adjoining waterways there are many sharp bends which are dangerous to vessels meeting or passing. On approaching a bend, a vessel should reduce speed sufficiently to be able to stop within half the distance to a ship coming from the opposite direction. Under no circumstances should a vessel attempt to overtake and pass another at a bend. Even with sufficient view of the channel ahead and after proper exchange and understanding of signals, the overtaken vessel may suddenly veer from current action. This is even more pronounced with larger vessels and tows.

### Crosscurrents

(160) Where two streams cross, the current will have a greater velocity in the deeper channel. This is noticeable along the Intracoastal Waterway where it follows a dredged canal cutting across a winding stream. Crosscurrents will also be noticed where either an inlet from the ocean or a drainage canal enter the waterway.

(161) Crosscurrents are especially strong at New River Inlet and Bogue Inlet, N.C. Failure to allow for cross currents when passing these and other inlets is the cause of many rescue calls to the Coast Guard.

### Spoil banks

(162) Nature quickly covers her scars. This is true of the spoil banks made by dredging. In the northern areas when awash these banks are often covered by grass, while in the southern areas they are covered by bushes and sometimes fairly large trees.

(163) **Water hyacinth** is a floating freshwater plant which infests numerous streams tributary to the South Atlantic and Gulf coasts. It has bright green leaves and a purple flower. It propagates from seeds and suckers, spreads quickly in most localities, and may cause complete suspension of navigation if not removed. The hyacinths form in mats or jams and float around driven by the wind or current. In open water these mats often resemble small islands. At times some of the bays and tributaries may be changed in appearance because of hyacinth jams. Where the water is apt to be brackish, an attempt can be made to force a boat through the mat. In doing so, however, care should be taken that any logs that might be floating in the weeds are not struck with force enough to damage the hull. Snakes may also be found on the hyacinth mats. The work of removing this growth is undertaken by the various Corps of Engineers districts and the State of Florida by the processes of spraying, cutting, and the use of booms.

### Mangrove

(164) Three distinct types of mangrove are found in the southern section of this area. Yellow or white mangrove grows to a height of about 4 feet and is found principally on the sand flats in front of the fast land. Along the shores of Biscayne Bay, the red mangroves commonly grow to a height of 20 to 30 feet, with occasional stands 40 to 50 feet tall along the mainland coast south of Miami. Along the shores of Florida Bay, red mangroves generally grow 10 to 15 feet tall, but occasionally grow to 25 feet. They are rooted in water most of the time. Black mangrove grows on sand ridges and higher ground which cover only at very high water or storm tides. The black mangrove sometimes grows to a height of 50 to 60 feet.

**Stumps and sunken logs**

(165) Reports are frequently made that vessels have struck shoals or rocks in rivers which have later proved to be stumps or sunken logs. Mariners are warned against navigating too close to the banks of streams where submerged stumps are known or may be expected to exist.

**Hurricane moorings**

(166) On receiving advisory notice of a tropical disturbance small boats should seek shelter in a small winding stream whose banks are lined with trees, preferably cedar or mangrove. Moor with bow and stern lines fastened to the lower branches; if possible snug up with good chafing gear. The knees of the trees will act as fenders and the branches, having more give than the trunks, will ease the shocks of the heavy gusts. If the banks are lined only with small trees or large shrubs, use clumps of them within each hawser loop. Keep clear of any tall pines as they generally have shallow roots and are more apt to be blown down.

**Manatees**

(167) The West Indian manatee is a herbivorous marine mammal that is protected at the federal level by the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. These acts make it illegal to harass, hunt, capture, or kill any marine mammal, including all dolphins, whales, and manatees. The manatee is a large (approximately 8 to 10 feet in total length) and slow-moving marine mammal with a torpedo-like body and a paddle-shaped tail. These animals mainly inhabit the estuarine and inland waters of Florida, although they have been sighted in the Atlantic Ocean and Gulf of Mexico, and have been seen as far north as Massachusetts and as far west as Texas. Due to their sensitivity to colder temperatures, in the winter manatees move from cooler waters and congregate, sometimes in large numbers, in warmer rivers and springs, streams and canals, and near the cooling water discharge outlets of power plants and other industrial sources. During the spring and autumn months, many manatees undertake extensive migrations along the Atlantic and Gulf Coasts. Manatee distribution in the warmer months of the year is typically more widespread.

(168) Manatees need to surface regularly to breathe, approximately every 2 to 10 minutes, but are capable of holding their breath for up to 20 minutes. Calves are approximately 3 feet in length at birth and stay with the mother for a period of up to 2 years. During this time, they nurse regularly from the mother and take more frequent breaths than a larger adult. This mother-calf bond is very important and critical to the survival of the calf; it is very important that the mother and calf do not become separated. Manatees are typically solitary in nature, found as a cow-calf pair, or found in small groups. However, when a female is in estrus, she may be accompanied by large numbers of males, typically referred to as a mating herd.

(169) Statewide aerial surveys (synoptic surveys) are conducted following significant cold weather to provide a minimum population estimate for manatees in Florida waters. In January 2009, the synoptic survey resulted in a total count of 3,802 manatees on both the east and west coasts of Florida. This is a minimum count, and it is reasonable to assume that some manatees were not detected during the surveys. Manatees are quite docile and have no natural enemies, but are an endangered species, mostly due to collisions with boats which have caused as many as 95 deaths per year. Watercraft-related mortality may result from injuries caused by the propeller and/or impact from a collision with a vessel. As such, manatee protection speed zones (ranging from no entry zones to 30 miles per hour zones) exist around the State of Florida to provide additional protection in areas of high manatee use and high watercraft-related mortality.

(170) The Florida Manatee Sanctuary Act authorizes the Florida Fish and Wildlife Conservation Commission (FWC) and, in some cases, local governments to regulate motorboat speed and operation in areas frequently used by manatees. The **regulated zones** are marked by large reflective signs or buoys. In these zones, boat operators must operate their vessels at or below the established limits, and no person may intentionally or negligently annoy, molest, harass, disturb, collide with, injure, or harm manatees. Maps of the state zones are available on the internet at http://MyFWC.com/. Questions about the state regulations should be directed to the FWC Imperiled Species Management Section, 620 South Meridian Street, Tallahassee, FL 32399. **Regulated zones** within the area covered by this Coast Pilot are in the St. Johns River generally between Lake George and Lake Monroe (includes the area around Blue Springs Run) and in the northern stretch of the river generally between the river mouth at Mayport and the Doctors Lake and Julington Creek area; and throughout most of the Atlantic Coast counties between Duval and Miami-Dade (as well as in many of the Gulf Coast counties between Collier and Citrus).

(171) The U.S. Fish and Wildlife Service has established **regulated zones** within the Merritt Island National Wildlife Refuge to protect the large number of manatees that occupy these waters from April through mid-November. "Idle speed" and/or "slow speed/minimum wake" areas are in Haulover Canal, Bairs Cove on the southeast side of Haulover Canal, Banana Creek at the north end of Merritt Island, and in the channel and basin at the Kennedy Athletic and Recreation Society marina on the west side of Banana River 1.5 miles north of Canaveral Barge Canal. The area on the east side of Banana River immediately south of the NASA Parkway is closed to all motorized craft from April 1 through November 14 annually. The **regulated zones** are well marked by signs that indicate the speed limit. The regulations are contained in **50 CFR 26** (not carried in this Coast Pilot).

Maps delineating the **regulated zones** are available from the Merritt Island National Wildlife Refuge, P.O. Box 6504, Titusville, Fla. 32780.

### Tides

(172) On the outer coast the mean range of tide increases from 2.8 feet at Cape Henry to 5.9 feet at Edisto Beach. In the sounds and rivers south to Florida the range is generally greater, reaching 8.0 feet or more at some locations. Along the east coast of Florida the average tide range is about 2.5 feet, and in the Florida Keys the ranges vary from 0.2 feet to 2.4 feet.

### Currents

(173) It appears that, except during northerly and northeasterly winds, a current of about 0.5 knot average velocity, setting northeastward with the trend of the coast, may be expected outside the 10-fathom curve between Cape Canaveral and Cape Hatteras. Farther offshore the velocity of the northeastward flow increases as the axis of the Gulf Stream is approached.

(174) Strong currents are produced by the wind along the coast during northeasterly and southerly gales, reversing or greatly increasing the normal current. Their velocity and direction depend upon the direction, strength, and duration of the wind. (See the Tidal Current Tables for detailed information.)

(175) The **Gulf Stream System** is the most famous of the principal ocean currents. The name was first used by Benjamin Franklin in 1769. In general, as the swift current of the Gulf Stream issues into the sea through Straits of Florida, its waters are characterized by a deep blue color, high-salinity, high temperature in the upper stratum, and presence of phosphorescence. Except near shoals where waves may stir up bottom sediments, Gulf Stream water is very clear, enabling visual penetration to unusually great depths. At its junction with coastal seawater, the edges may frequently be recognized in moderate weather by ripples, as well as by the difference in color. Northward, in the cooler regions, the evaporation from its surface, when the temperature of the air is lower than that of the water, is apparent as "sea smoke." In addition, the stream may carry with it some **Gulf weed** (Sargassum), which is olive brown, branched seaweed with berrylike air vessels.

(176) The upstream extent of the Gulf Stream System can be traced to the Yucatan Strait where a well-established current enters the Gulf of Mexico. The current in the Gulf of Mexico is called the **Loop Current.** The position of the Loop Current is quite variable, but there is some evidence of a cyclical pattern of about 290 days. The Loop Current begins with a short flow pattern protruding into the Gulf of Mexico, then it slowly builds up, gradually protruding northward and westward into the Gulf and reaching as far as 28°N and 90°W before shedding a large warm ring. The remaining Loop Current has a shortened flow path and begins the process anew. The large detached warm ring will drift about 1.5 miles per day west to southwestward into the western Gulf of Mexico where it will eventually dissipate. Gulf of Mexico warm rings average about 120 miles in diameter. The warm ring has a clockwise flow with a maximum current close inside its periphery of 0.5 to 1.5 knots.

(177) After entering the Straits of Florida between Cuba and the Florida Keys, the Gulf Stream System's path becomes much more stable. The major variation of the current from off Key West to off Little Bahama Bank appears to be a meandering of the axis of the current within the narrow confines of the Straits. The current within the Straits and slightly to the north is frequently referred to as the **Florida Current**.

(178) Shortly after emerging from the Straits of Florida, the Gulf Stream is joined by the **Antilles Current**, which flows northwesterly along the open ocean side of the West Indies. The Antilles Current, like the Gulf Stream, carries warm, highly saline waters of clear indigo blue. The union of the two currents gives rise to a broad and deep current possessing about the same characteristics as the Florida Current except that the velocity is somewhat reduced. The Gulf Stream from the Florida Straits flows northward, then northeastward, paralleling the general trend of the 100-fathom contour up to Cape Hatteras. From 32°N to Cape Hatteras the stream shows some lateral meandering which does not generally exceed one stream width, or about 40 miles.

(179) Beyond Cape Hatteras the Gulf Stream flows eastward away from the coast and into much deeper water. As it moves into progressively deeper water, the stream is subject to increased meandering which can have as large a north-south extent as 270 miles. The wavelike meanders of the stream propagate eastward at speeds of about 3 to 5 miles per day. These meanders occasionally shed detached current rings or eddies which are found north and south of the stream and which are respectively warmer and cooler than the surrounding waters. Rings are generally formed east of 65°W.

(180) Warm rings average about 70 miles in diameter and are found north of the stream between it and the continental shelf. Warm rings rotate in a clockwise direction with a maximum flow of about 1.6 knots located about 2/3-3/4 from the center of the eddy. Warm rings generally move about 1.5 miles per day westward after formation in the region between the stream and the continental shelf to about 70°W. From 70°W the rings generally move southwestward along the continental shelf and eventually are absorbed into the stream near Cape Hatteras. Many warm rings are absorbed by the stream well before they reach Cape Hatteras. About 20 warm rings are formed each year and average about a 20-week life cycle. Cold rings average about 60 miles in diameter and are found south of the stream in the Sargasso water region. Cold rings rotate in a counterclockwise direction with a maximum flow of about 1.6 knots located 2/3-3/4 from the center. Cold ring velocities can be significantly higher than 1.6 knots. Cold rings tend to move about 1.5 miles per day southwestward after

formation and are eventually absorbed back into the Gulf Stream. About 20 cold rings are formed each year and average about a 1.5 year life cycle.

(181) Eastward of the Grand Banks of Newfoundland, the whole surface is slowly driven eastward and northeastward by the prevailing westerly winds to the coastal waters of northwestern Europe. For distinction, this broad and variable wind-driven surface movement is sometimes referred to as the **North Atlantic Drift.**

(182) On its western or inner side, the Gulf Stream is separated from the coastal waters by a zone of rapidly falling temperature, to which the term **north wall** (**west wall** from Georgia south) has been applied. The abrupt change in the temperature of the waters separated by the north wall (west wall) is frequently very striking and is a definite indication of the edge of the stream. It is most clearly marked north of Cape Hatteras but extends, more or less well defined, from the Straits of Florida to the Grand Banks of Newfoundland. In the vicinity of the Grand Banks, the north wall represents the dividing line between the warm current of the Gulf Stream and the cold waters of the **Labrador Current**, which according to observations, turns sharply, between 42°-43°N and 51°-52°W, and flows parallel to the Gulf Stream.

(183) Throughout the whole stretch from the Florida Keys to past Cape Hatteras the stream flows with considerable velocity. Characteristic average surface speed is on the order of 2.5 knots, increasing to about 4.5 knots off Cape Florida where the cross sectional area of the channel is least. These values are for the axis of the stream where the current is a maximum, the speed of the stream decreasing gradually from the axis as the edges of the stream are approached. The axis of the stream is estimated to be about 3-15 miles seaward of the north wall. Both the speed and position of the axis of the stream fluctuate from day to day, hence description of both position and speed are averages.

(184) Crossing the stream at Jupiter or Fowey Rocks, an average allowance of 2.5 knots in a northerly direction should be made for the current.

(185) Crossing the stream from Habana, a fair allowance for the average current between 100-fathom curves is 1 knot in an east-northeasterly direction.

(186) A vessel bound from Cape Hatteras to Habana, or the Gulf ports, crosses the stream off Cape Hatteras. A fair allowance to make in crossing the stream is 1 to 1.5 knots in a northeasterly direction for a distance of 40 miles from the 100-fathom curve.

(187) Earlier systematic observations on the Gulf Stream dealt with the temperature of the water rather than its motion, and the axis was taken to be along the line of highest temperature obtained. Later the axis was taken to mark the line of greatest velocity. Ordinarily it is assumed that these two axes coincide, but this is by no means certain. The thermometer, although it indicates the limits of the stream in a general way, is therefore only an approximate guide to the velocity of the currents.

(188) The lateral boundaries of the current within the Straits of Florida are fairly well fixed, but as the stream crosses 32°N its eastern boundary becomes somewhat vague. On the western side the limits can be defined approximately since the waters of the stream differ in color, temperature, salinity, and flow from the inshore coastal waters. On the east, however, the Antilles Current combines with the Gulf Stream so that its waters here merge gradually with the waters of the open Atlantic. Observations of the National Ocean Service indicate that, in general, the average position of the inner edge of the Gulf Stream from the Straits of Florida to Cape Hatteras lies inside the 100-fathom curve.

(189) At the western end of the Straits of Florida the limits of the Gulf Stream are not well defined. Between Fowey Rocks and Jupiter Inlet the inner edge lies very close to the shoreline.

(190) Along the Florida Reefs between Alligator Reef and Dry Tortugas the distance of the northerly edge of the Gulf Stream from the edge of the reefs gradually increases toward the westward. Off Alligator Reef it is quite close inshore, while off Rebecca Shoal and Dry Tortugas it is possibly 15 to 20 miles south of the 100-fathom curve. Between the reefs and the northern edge of the Gulf Stream the currents are ordinarily tidal and are subject at all times to considerable modification by local winds and barometric conditions. This neutral zone varies in both length and breadth; it may extend along the reefs a greater or lesser distance than stated, and its width varies as the northern edge of the Gulf Stream approaches or recedes from the reefs.

### Location of the Gulf Stream

(191) The approximate position of the Gulf Stream for various regions is shown on the following NOS charts: 11013, Straits of Florida; 411, South Carolina to Cuba; 11460, Cape Canaveral to Key West; 11420, Alligator Reef to Habana. Chart 11009 shows the axis and the position of the inner edge of the Gulf Stream from Cape Hatteras to Straits of Florida.

(192) Up-to-date information on the location, width, and maximum surface temperature of the Gulf Stream System is available in a variety of ways. Such information is broadcast by NOAA Weather Radio stations from Key West, Florida, to Cape Hatteras, North Carolina. The times of these broadcasts and their formats vary from station to station, but in general, all give the distance to the inshore edge of the Stream with reference to a navigational light or buoy, the width of the Stream when that is known, and the maximum temperature. This information is derived largely from infrared satellite imagery, and it is unfortunately not available during the warmer summer months south of about Jupiter Inlet. (See Appendix A for a list of NOAA Weather Radio stations.)

(193) For ships in port or with telecopy equipment, an analysis of the Gulf Stream System from the central Gulf of Mexico to Cape Hatteras which includes an estimated

location of the maximum current is prepared on Mondays, Wednesdays, and Fridays by Tropical Storm Analysis Center, National Weather Service, NOAA, 1320 South Dixie Highway, Coral Gables, FL 33146, 305-665-4707. These analyses are available to anyone with a telecopy receiver compatible with a Group 3 compatible automatic telecopier by simply telephoning 305-661-0738.

(194) An analysis of the Gulf Stream System from the western Gulf of Mexico to Cape Hatteras (South Panel) and from Cape Hatteras to Nova Scotia (North Panel) is prepared by Ocean Products Center, National Ocean Service, NOAA, World Weather Building, 5200 Auth Road, Washington, DC 20233, 301-763-8294.

(195) The North Panel is generated on Mondays, Wednesdays, and Fridays, while the South Panel is generated on Tuesdays and Thursdays. A subscription to these analyses is available upon application, to Satellite Data Services Branch, National Environmental Satellite, Data, and Information Service, World Weather Building, Room 100, 5200 Auth Road, Washington, DC 20233, 301-763-8111. These analyses are available via Xerox Model 410 automatic telecopier by telephoning 301-899-1139. They are also transmitted by KWX, Lewes, DE, via radiofax on 4223 kHz at 0645Z and 1845Z. Contact National Weather Service Forecast Office, Washington, DC, at 301-763-8088 or 8239, to ascertain any changes to the above telecopier and radiofax schedules.

(196) **Wind-driven currents** are very complicated. Their velocities and directions depend upon a number of factors such as the velocity, direction, and duration of the wind, the proximity of the coast and the direction of the coastline. Generally in the Northern Hemisphere the wind-driven current sets somewhat to the right of the wind, but in coastal waters there are many exceptions to this general rule, the current often setting to the left of the wind, due to the tendency of the current to follow the direction of the coastline or to other local conditions.

(197) The velocity of the wind current relative to that of the wind also varies with the locality. (See the Tidal Current Tables for information on wind-currents.)

### Weather

(198) From hurricanes to "Nor'easters" these coastal waters are plagued with potential weather hazards year-round. The Gulf Stream, local currents and numerous shoals complicate matters. The following text describes the weather problems that face the mariner. The individual chapters contain information on local weather hazards. Government radio stations that transmit weather information and National Weather Service offices are listed in Appendix A. Climatological tables for coastal locations and ocean areas, compiled from ship observations, follow Appendix A. This text was produced by the National Oceanographic Data Center.

(199) Coastal Warning Display locations are listed on NOS charts and shown on the Marine Weather Services Charts published by the National Weather Service. The Marine Weather Services Charts, which also show radio stations that transmit marine weather broadcasts and additional information of interest to mariners, are available from National Ocean Service, Distribution Branch (N/CG33). (See Appendix A for address).

### Extratropical Cyclones

(200) One of the more frequent weather features the mariner encounters along the coast is the winter storm or "Nor'easter." These Extratropical systems can develop in any month. Their size can vary from an insignificant wave along a front to a gigantic circulation that covers most of the western North Atlantic. Winds can reach hurricane force and seas of 40 feet (12 m) and more have been encountered. While these storms are usually well forecasted they can develop or deepen explosively, particularly off Cape Hatteras, over the Gulf Stream, giving rise to the term "Hatteras Storms."

(201) These winter storms, present in all months, are most frequent and intense from November through March. December, January and February are the heart of the season, when an average of four to six storms per month roam these waters. Many systems develop in the Gulf of Mexico, move across central or northern Florida, then up the East Coast. Some of the most intense storms have developed early and late in the season. In March 1962 a slow moving, late winter coastal storm combined with spring tides and wrought tremendous destruction from Florida to New England. Persistent northeasterlies and a long fetch raised spring tides to near record levels and generated high seas in the open ocean. Several ships were caught, including a tanker which broke in two off Cape Hatteras. During the Veterans Day storm in November 1968 a ship near Ocracoke Inlet ran into 35-foot seas in 60-knot winds.

(202) In March 1993, the "Storm of the Century", a slow moving late winter coastal storm, combined with spring tides and wrought tremendous destruction from Florida to New England. From hurricane-type storm surge and winds along the upper Gulf Coast of Florida to record snowfalls in the southern and central Appalachians and a first-time-ever interruption of air travel at every airport east of the Mississippi, the March 1993 extra tropical low pressure system will be a storm long remembered.

### Cold Fronts

(203) These, often sharp, boundaries between relatively warm air ahead and cold air behind usually approach this coast from the west through north. Ahead of the front, winds are usually squally and often blow out of the south through southwest. Cirrus clouds give way to Altocumulus or Altostratus and Nimbostratus, then Cumulonimbus. Pressure falls moderately and showers, and perhaps thunderstorms, occur. Seas become choppy. With the frontal passage winds shift rapidly to the west and northwest. Strong gusts and squalls continue. Clearing usually occurs a short distance behind

the front as the cold air moves in. Cold fronts can move through the northern part of the area quite rapidly. Their speeds vary from about 10 to 20 knots in summer up to 40 knots in winter. Often, cold fronts remain north of this coast. Their frequency decreases with latitude. During the winter season strong arctic and polar outbreaks occasionally push southward to Florida and in rare instances cold fronts reach the Florida Keys. In other seasons these outbreaks are not strong enough to reach the southern part of this coast.

(204) During the spring and summer when the air ahead of the cold front may be very unstable, a line of thunderstorms, known as a squall line, may develop. These instability lines can form 50 to 300 miles (93 to 555 km) ahead of a fast moving front. They may even contain tornadoes or waterspouts. These storms can inflict considerable damage on fishing vessels and small craft.

**Tropical Cyclones**

(205) A tropical cyclone is a warm core, low pressure system that develops over tropical oceans. It exhibits a rotary, counterclockwise circulation in the Northern Hemisphere around a center or "eye." In small tropical cyclones the diameter of the area of destructive winds may not exceed 25 miles (46 km) while in the greatest storms the diameter may reach 500 miles (925 km). At the center is a comparatively calm, sometimes clear, area known as the eye. The diameter of the eye can vary from about 5 to 25 miles (9 to 46 km). Winds are usually strongest near the center. They can reach 175 knots or more in an intense hurricane. In the North Atlantic Region (West Indies, Caribbean Sea, Gulf of Mexico and waters off the U.S. east coast) the following terminology is used in tropical cyclone warnings issued by the National Hurricane Center (National Weather Service):

(206) (1) Tropical Depression. A tropical cyclone in which the maximum sustained surface wind (1-minute mean) is 33 knots or less.

(207) (2) Tropical Storm. A tropical cyclone in which the maximum sustained surface wind (1-minute mean) ranges from 34 knots to 63 knots.

(208) (3) Hurricane. A tropical cyclone in which the maximum sustained surface wind (1-minute mean) is 64 knots or more.

(209) While the following term is not normally used in tropical cyclone advisories it may appear in related products.

(210) Tropical Wave–A minor cyclonic circulation in the easterly tradewinds, which could develop into a tropical depression but lacks evidence of a closed circulation; also known as easterly wave.

(211) With the advances in observations through satellite, a hybrid storm, called a subtropical cyclone, has been discovered. The character of this storm lies between the tropical and Extratropical cyclone. It is often short lived and dissipates without developing beyond the depression stage. Those that intensify occasionally change character and become tropical storms or hurricanes. While subtropical they are designated as a depression or storm (no upper wind limit) similar to tropical systems.

(212) Along the coast greater damage may be inflicted by water than by wind. Prolonged winds blowing toward shore can increase water levels from about 3 to 10 feet (1 to 3 m) above normal. This storm tide may begin when the tropical cyclone center is 500 miles (925 km) or more away. It gradually increases until the winds change direction. On top of this the low pressure in the storm's center can create a ridge or wall of water known as a surge. This will move in the direction of the storm's movement and can be disastrous. The effect may be similar to that of a tsunami (seismic sea wave) caused by earthquakes in the ocean floor. Storm surges can push these tides to 20 feet (6 m) or more above normal. About 3 or 4 feet (.9 or 1.2 m) of this is due to the decrease of atmospheric pressure and the rest to the strong winds. Additional water damage results from the pounding of sea and swell. Torrential rains, generated by tropical cyclones, can cause both flash floods and river floods from inland rains.

**Tropical cyclone climatology**

(213) In an average season nine or ten tropical cyclones develop and five of these reach hurricane strength; about two hurricanes reach the U.S. While they may develop in any month, June through November is generally considered the tropical cyclone season, with a peak in August, September and October. Early and preseason storms, from May through mid-July, are most likely to originate in the western Caribbean Sea and Gulf of Mexico. From mid-July through late September this development is spread through the main basin of the tropical Atlantic and a much more persistent westerly movement is noticeable. From late September through November, activity gradually confines itself to the Caribbean and Gulf of Mexico. A northerly movement, similar to early season storms, becomes more apparent. However, because of the large reservoir of heat available at the end of the season, these storms are often more intense than their early season counterparts.

(214) The most common path is curved, the storms first moving in a general westward direction, turning later to the northwestward and finally toward the northeast. A considerable number, however, remain in low latitudes and do not turn appreciably toward the north. Freak movements are not uncommon, and there have been storms that described loops, hairpin-curved paths, and other irregular patterns. Movement toward the southeast is rare, and, in any case, of short duration. The entire Caribbean area, the Gulf of Mexico, the coastal regions bordering these bodies of water, and the Atlantic coast are subject to these storms during the hurricane season.

(215) The average speed of movement of tropical cyclones is about 10 to 15 knots. This speed, however, varies considerably according to the storm's location,

development, and the associated surface and upper air patterns. The highest rates of speed usually occur in the middle and higher latitudes and range up to 40 to 50 knots. Storms are slowest during recurvature or when looping. They can also become stationary in the absence of steering currents.

### Hurricane Warnings and Forecasts

(216) The civilian hurricane warning service for the North Atlantic is provided by the National Hurricane Center/Tropical Prediction Center, Miami, Florida. They collate ship, aircraft, radar and satellite data to produce and issue tropical cyclone warnings and forecasts for the North Atlantic Ocean, including the Caribbean Sea and Gulf of Mexico. The principal product is the Tropical Cyclone Advisory message especially tailored for marine, aviation, military and public interests. They are issued every 6 hours with intermediate bulletins provided when needed.

(217) For tropical storms and hurricanes threatening to cross the coast of the U.S., coastal warnings are issued to the public by the National Hurricane Center through local Hurricane Warning Offices in order that defense against damage, and perhaps evacuation, can be implemented. Two levels of warnings are employed. The "Hurricane Watch" is a preliminary alert that a hurricane may threaten a specified portion of the coast. It is issued approximately 36 hours before landfalls could occur. The second level is the "Hurricane Warning", which indicates that hurricane conditions are expected within 24 hours in advance of landfall. It is aimed at providing the best compromise between timeliness and accuracy for civil defense purposes so that its warning may be too late to allow ocean-going vessels to get underway and complete a successful evasion in open water. To compensate for this, the Marine Advisory contains additional guidance in the form of probabilities of hurricane strikes, for coastal locations and even offshore coordinates, and storm position forecasts for up to 72 hours in advance.

### Hurricane Havens

(218) The text for this section has been condensed from the **Hurricane Havens Handbook for the North Atlantic Ocean**, published by the Marine Meteorology Division, Naval Research Laboratory, Monterey, CA 93943, and available at http://www.nrlmry.navy.mil/pubs.htm. The navigational information may be applied to extratropical cyclones as well. Summaries for individual ports, where available, can be found in the appropriate chapters. The complete publication is available through the National Technical Information Service, Springfield, Virginia 22161 (http://www.ntis.gov).

(219) The classical doctrine held by most mariners is that ocean-going ships should leave ports that are threatened by a hurricane. Despite this natural caution, ships continue to be damaged in port or after leaving port, as a result of tropical cyclone encounters. This often stems from the difficulty in forecasting tropical cyclone movement, although these forecasts have improved significantly in the past two decades. In addition to evaluating the forecast it is necessary to assess the risks of remaining in port or putting to sea according to the circumstances of the threat, the facilities of the port and the capabilities of the vessel and crew. For an evaluation as to a course of action several factors are important. The risk of a particular port experiencing a hurricane is often dependent on seasonal and geographic influences. Forecasts of hurricane movements are more reliable in some areas, particularly the lower latitudes. In the midlatitudes where storms are often recurving, the difficulty increases. It is important to know the sheltering capabilities of the port that is being considered and the speed of advance of tropical cyclones in the latitudes that you may be sailing. When the tropical cyclone speeds approach or exceed vessel speed, options become limited.

(220) Large changes in the balance of these factors that may affect a leave/stay decision are evident all along the Atlantic coast. At Charleston, SC for example the threat of a hurricane is moderate as is the average forecast error. The speed of storm advance is relatively low for both average and extreme values. These factors suggest a relatively low risk of damage at sea if an evasion is executed as early as possible. Ports in the Mayport area have the potential of being fairly good hurricane havens despite their conspicuous lack of shelter, because of the rarity of serious hurricane threats and the prospects of a safe escape to sea when needed; this is due to the low speeds of advance of near-coastal storms and relatively low forecast error. Two ports with a high risk of hurricane threats, Key West and Morehead City, show a large contrast in the remaining leave/stay decision factors. Hurricanes at Key West appear predictable and easy to evade at sea. However, the combination of unpredictability and relatively high speed of advance of near-coastal storms affecting North Carolina, marks Morehead City as a less secure port to occupy during the hurricane season than Key West, and one from which evasion at sea carries a higher risk of damage.

(221) In the northeast, certain ports have the potential to offer good hurricane haven qualities because of the low risk of a hurricane threat in conjunction with topographic shelter. In addition the risk of misjudging the threat, due to relatively large forecast errors, is considerable. Furthermore, the risk of sustaining damage in attempting to evade at sea is increased by the usually fast-moving storms. This combination should encourage mariners in this region to regard evasion at seas as a last resort.

(222) Along the U.S. Gulf of Mexico coast there is a reduced flexibility in evasion options created by the shape of the Gulf. This biases the leave/stay decision in favor of an early departure, which effectively reduces the accuracy of the threat prediction. The large range of possible speeds of storms affecting the coast from Pensacola to

New Orleans should encourage even earlier departure. The net result is that Gulf ports should be considered "high risk" ports similar to Key West and Morehead City. Additionally, local factors in the Gulf area further diminish the security of many ports. For example, the strong impact of the storm surge, in many places, leads to the closure of ports due to sudden silting of their long, dredged approach channels.

(223) A sudden unexpected change in the speed or direction of movement of a tropical cyclone, or a change in its intensity, may call for a hasty departure from port in deteriorating weather.

(224) However, limitations in manpower, port tug facilities or the state of readiness of the ship's machinery will increase the risk of the vessel being damaged during departure. Furthermore, the chances of gaining sufficient sea room in heavy weather to avoid damage after leaving port, are also decreased. The odds for preventing serious damage to the vessel in these circumstances, swing in favor of using the resources available to secure the ship firmly to her berth. These measures should include laying anchors into the channel or basin to hold her away from the pier or wharf face. This is particularly important in preventing damage to both vessel and pier if storm tides flood the wharf. These tidal effects will require lines to the pier to be tended until the hurricane threat is well passed. Certain merchant vessels may also consider ballasting down if the bottom at the berth is likely to be clear of obstacles. Under pressure of these circumstances, proceeding to anchor or moor is a less attractive alternative unless both the resources to accomplish the move safely and the assurance of an authenticated hurricane mooring or anchorage, are available.

(225) Of the 81 tropical cyclones that threatened Cape Hatteras (came within 50 nautical miles (93 km)) during the period 1842-1995, 67 occurred during the months of August, September, and October. As with the entire Atlantic basin, the main threat is in September. Due to the location of the Cape, its extension out into the Atlantic from the mainland, the predominate direction from which storms arrive is from the South or Southeast. Since 1950, 32 storms have come within 50 nm (93 km) of the Cape. Perhaps the two most memorable storms of recent times are hurricane Donna in 1960 and hurricane Gloria in 1985. Donna, in September 1960, came ashore near Morehead City with highest sustained winds of 95 knots and passed about 50 nm miles (93 km) west of Cape Hatteras while maintaining that intensity. Gloria passed directly over the Cape on September 27, 1985 with 90-knot winds. The maximum wind at Cape Point was 64 knots.

(226) Of the 60 tropical cyclones that threatened Charleston during the period 1842-1995, 46 occurred during the months August, September, and October. By far the greatest threat is in September. The predominate direction from which the storm arrives is from the Southwest and usually has weakened greatly since making initial landfall along the Gulf Coast and crossing several hundred miles (&gt_1;450 km) of land. Since 1950, 23 storms have come within 50 nm (93 km) of Charleston. Perhaps the two most memorable storms of recent times are hurricane David in 1979 and hurricane Hugo in 1989. David came ashore near Savannah Beach, Georgia and raked the Charleston area with gusts of 85 knots. Ten years later, Hugo came ashore at Sullivans Island, just north of Charleston, with peak winds of 120 knots. Downtown Charleston reported winds of 76 knots with gusts to 94 knots while the airport had sustained winds of 68 knots with gusts to 85 knots. The maximum one-minute wind at Bulls Bay, near the point of impact, was estimated in excess of 120 knots.

(227) Of the 59 tropical cyclones that threatened Daytona Beach during the period 1842-1995, 47 occurred during the months August, September, and October. By a narrow margin, the greatest occurrence is in September. The predominate direction from which the storm arrives is from the South or Southwest. Since 1950, 22 storms have come within 50 nm of Daytona Beach. Hurricane Donna is likely the most memorable storm to effect the Daytona Beach area in recent memory. On September 11, 1960, Donna crossed the central Keys moving to the northwest and abruptly turned northward crossing the southwest Florida coast near Naples. From there, Donna continued north-northeastward, up the spine of the peninsula, moving back out over open water north of Daytona Beach. The maximum wind at landfall was estimated near 135 miles per hour (60 m/s) with gusts to 150 miles per hour (67 m/s) and winds were still 90 miles per hour (40 m/s) by the time the storm reached the Daytona Beach area.

(228) Of the 58 tropical cyclones that threatened Miami during the period 1842-1995, 52 occurred during the months August, September, and October. At this latitude, along with the proximity of the Caribbean Sea and much warmer water, October is the most likely month of occurrence. The predominate direction from which the storm arrives is from the south or southeast. Since 1950, 24 storms have come within 50 nm of Miami. Hurricane Cleo in 1964 and Hurricane Andrew in 1992 are likely the most noteworthy storms to affect Miami in recent memory. Hurricane Cleo was a very small storm and did little damage. It passed near Miami on August 27, 1964. It is perhaps most noteworthy due to its punch. Maximum winds were 110 miles per hour (49 m/s) with gusts to 135 miles per hour (60 m/s). Hurricane Andrew passed just south of Miami on August 24, 1992. Andrew goes on record as being the storm having one of the lowest air pressure at landfall of any storm in U.S. history. Andrew ravaged Homestead, Florida, in the early morning hours of August 24 with winds in excess of 150 knots on a path that took it across south Florida in four hours. Andrew ranks as one of the most costly natural disaster to date for the United States.

### Tropical cyclones at sea

(229) Few experiences rival that of encountering a full blown hurricane at sea. However, even if there were no transmitted advisories, nature provides its own tropical warnings. Several days before its arrival, the hurricane heralds its existence.

(230) Swells that were passing the ship at ten to fifteen per minute increase in length and now pass at about two to five per minute. The direction from which they arrive marks the relative bearing of the storm.

(231) A second rough fix may be obtained by adding 115° (Northern Hemisphere) to the direction from which the wind is blowing.

(232) Another indicator is the barometer. In the tropics there is a normal rise and fall of barometric pressure with the high points at about 1000 and 2100 LST. When the storm is 500 to 1,000 miles (925 to 1850 km) away the barometer may rise slightly and then a pumping action may begin. When it starts a steady fall, activity is brewing.

(233) When the storm is about 300 to 600 miles (555 to 1110 km), away white, fibrous, cirrus clouds ("mare's tails") appear in a nearly cloudless sky. These seem to converge in the direction from which the storm is approaching, particularly at sunrise and sunset. The barometer continues to fall. The cirrus gives way to a veil of cirrostratus followed by altostratus, then stratocumulus. Mist-like rain is interrupted by an occasional shower as the barometer drops about 4 millibars. Winds become gusty and increase to about 22 to 40 knots. On the horizon appears a dark wall of heavy cumulonimbus, the bar of the storm. Portions of this cloud occasionally break off and drift across the sky accompanied by gusty rain squalls. As the bar approaches, from the direction of the storm's center, the barometer falls more rapidly. Windspeeds increase. Seas become steeper. Squall lines sweep past in ever-increasing number and intensity.

(234) The arrival of the bar is accompanied by dark skies, nearly-continuous squalls, a steep-falling barometer and rapidly increasing winds. The hurricane center may still be 100 miles (185 km) away. As the center approaches, winds whip through the superstructure. Seas become mountainous. Wave tops are blown off to mingle with torrential rain that fills the air with water. Visibility drops to near zero. Survival becomes the prime consideration. Few experiences rival that of encountering a full blown hurricane at sea. However, even if there were no transmitted advisories, nature provides its own tropical warnings. Several days before its arrival, the hurricane heralds its existence. Swells that were passing the ship at ten to fifteen per minute increase in length and now pass at about two to five per minute. The direction from which they arrive marks the relative bearing of the storm. A second rough fix may be obtained by adding 115° (Northern Hemisphere) to the direction from which the wind is blowing. Another indicator is the barometer. In the tropics there is a normal rise and fall of barometric pressure with the high points at about 1000 and 2100 LST. When the storm is 500 to 1,000 miles (925 to 1850 km) away the barometer may rise slightly and then a pumping action may begin. When it starts a steady fall, activity is brewing. When the storm is about 300 to 600 miles (555 to 1110 km), away white, fibrous, cirrus clouds ("mare's tails") appear in a nearly cloudless sky. These seem to converge in the direction from which the storm is approaching, particularly at sunrise and sunset. The barometer continues to fall. The cirrus gives way to a veil of cirrostratus followed by altostratus, then stratocumulus. Mist-like rain is interrupted by an occasional shower as the barometer drops about 4 millibars. Winds become gusty and increase to about 22 to 40 knots. On the horizon appears a dark wall of heavy cumulonimbus, the bar of the storm. Portions of this cloud occasionally break off and drift across the sky accompanied by gusty rain squalls. As the bar approaches, from the direction of the storm's center, the barometer falls more rapidly. Windspeeds increase. Seas become steeper. Squall lines sweep past in ever-increasing number and intensity. The arrival of the bar is accompanied by dark skies, nearly-continuous squalls, a steep-falling barometer and rapidly increasing winds. The hurricane center may still be 100 miles (185 km) away. As the center approaches, winds whip through the superstructure. Seas become mountainous. Wave tops are blown off to mingle with torrential rain that fills the air with water. Visibility drops to near zero. Survival becomes the prime consideration.

(235) The eye brings a sudden drop in winds. Rain stops and skies may clear enough to see the sun. Mountainous seas approach from all sides. The barometer reaches its lowest point which may be 50 to 100 millibars below normal. As the wall cloud on the opposite side of the eye arrives, the full fury of the storm returns as suddenly as it ceased, with winds blowing from the opposite direction. The sequence of conditions is reversed and passes more quickly as the circulation is usually smaller in the rear of the storm.

### Maneuvering for a tropical cyclone

(236) Knowledge is the most important aid when a tropical cyclone is threatening. It is vital to know the storm's position, intensity, projected movement and how to react to this information. By plotting the center as provided in the warnings, possibly even adjusting its position with a radar fix or local signs, its position in relation to the vessel can be determined.

(237) Shipboard radar provides the mariner with an advantage and if radio-facsimile charts are available the advantage is even greater. The mariner is even more fortunate if his ship has the appropriate satellite receiving-recorder, either facsimile or photographic, to position the cloud patterns of the storm as it moves. If, despite warning systems and forecasts, a storm catches up with the ship, prepare for the worst.

(238) There are three major schools of thought concerning ship handling in hurricanes. They may be described as active, passive and defensive:

(239) Active: Take an evasive course and get out of the storm.

(240) Passive: Shut down and wallow.

(241) Defensive: Just maintain steerageway, keeping the wind and seas either off the bow or the quarter.

(242) The course of action will depend on the size and intensity of the storm, the nature and condition of the ship, the proximity to shoal water, and other factors which can only be determined by the master. While the vessel can still make considerable way through the water, a course should be selected to take it as far as possible from the center. If the vessel can move faster than the storm, it is a relatively simple matter to outrun the storm if sea room permits. But when the storm is faster, the solution is not as simple. In this case, the vessel, if ahead of the storm, will pass closer to the center. The problem is to select a course that will produce the greatest possible minimum distance. This is best determined by means of a relative movement plot.

(243) In the Northern Hemisphere, that part of the circulation to the right of the storm track (facing in the direction toward which the storm is moving) is called the dangerous semicircle. It is considered dangerous because (1) the actual wind speed is greater than that due to the pressure gradient alone, since it is augmented by the forward motion of the storm, and (2) the direction of the wind and sea is such as to carry a vessel into the path of the storm (in the forward part of the semicircle). The circulation to the left of the storm track is known as the navigable semicircle, where the wind is slowed by the storm's motion and vessels are pushed away from the path. Seas are usually lower in this portion. In an ideal situation the following general guidelines could be used:

**Right or dangerous semicircle**

(244) Bring the wind broad on the starboard bow (045° relative), hold course, and make as much way as possible. If obliged to heave to, do so with head to the sea.

**Left or navigable semicircle**

(245) Bring the wind onto the starboard quarter (135° relative), hold course, and make as much way as possible. If obliged to heave to, do so with stern to the sea.

**On storm track, ahead of center**

(246) Bring the wind two points abaft the starboard quarter (157½° relative), hold course, and make as much way as possible. When well within the navigable semicircle, maneuver as indicated above.

**On storm track, behind center**

(247) Avoid the center by the best practical course, keeping in mind the tendency of tropical cyclones to curve northward and eastward.

(248) If the storm maintains its direction and speed, the ship's course should be maintained as the wind shifts. In all cases, one should be alert to changes in the direction of movement of the storm center, particularly in the area where the track normally curves toward the north.

(249) If it becomes necessary for a vessel to heave to, the characteristics of the vessel should be considered. A ship is concerned primarily with damage by direct action of the sea. A good general rule is to heave to with head to the sea in the dangerous semicircle or stern to the sea in the navigable semicircle. This will result in the greatest amount of headway from the storm center, and the least amount of leeway toward it. If a vessel handles better with the sea astern or on the quarter, it may be placed in this position in the navigable semicircle or in the rear half of the dangerous semicircle; movement should be slow. It has been reported that when the wind reaches hurricane speed and the seas become confused, some ships ride out the storm best if the engines are stopped, and the vessel is permitted to seek its own position. In this way, it is said, the ship rides with the storm instead of fighting against it.

(250) In a sailing vessel, while attempting to avoid a storm center, one should steer courses as near as possible to those prescribed above for power vessels. However, if it becomes necessary for such a vessel to heave to, the wind is of greater concern than the sea. A good general rule always is to heave to on whichever tack permits the shifting wind to draw aft. In the Northern Hemisphere this is the starboard tack in the dangerous semicircle and the port tack in the navigable semicircle.

**Waves**

(251) In early March of 1980 a series of frontal atmospheric waves moved across Florida from the Gulf of Mexico. One persisted until it reached the Gulf Stream where it deepened rapidly into a powerful extratropical storm as it headed east-northeastward. Off Cape Hatteras three ships reported 40-foot seas (12 m) while several others encountered wave heights of 25 to 35 feet (8 to 11 m). The National Data Buoy Center's buoy 41001 (35.0°N., 72.0°W.) recorded a maximum wave height of 33 feet (10 m). Extratropical and tropical cyclones are responsible for potentially similar conditions in the deep waters off this entire coast year-round. Fortunately these situations are infrequent. However, it has been calculated that in an average 5-year period, significant wave heights of 40 to 50 feet (12 to 15 m) and extremes

**Wave Heights from Significant Wave Heights (SWH)**

| | |
|---|---|
| Most frequent wave heights | 0.5 x SWH |
| Average wave heights | 0.6 x SWH |
| Significant wave height (average height of highest 33%) | 1.0 x SWH |
| Height of highest 10% of the waves | 1.3 x SWH |
| One wave in 1,175 waves | 1.9 x SWH |
| One wave in 300,000 waves | 2.5 x SWH |

of 70 to 90 feet (21 to 27 m) are possible. These figures decrease with latitude (40 feet and 70 feet (12 and 21 m) off southern Florida.)

(252) The table below (extracted from Marine Weather of Western Washington, Kenneth E. Lilly, Jr., Commander, NOAA, Starpath School of Navigation, 1983), shows the relationship between significant and other wave heights.

(253) This table can be used to project a range of wave heights that might be expected in deep water. If significant wave heights of 10 feet (3 m) are forecast then the most frequently observed waves should be in the 5 to 6 foot (2 to 3 m) range while one wave in 100 should reach 17 feet (5 m). A giant or rogue wave might reach 25 feet (8 m) in these circumstances. These rogue or "Killer" waves occur when the large number of different waves that make up a sea occasionally reinforce each other. This action creates a wave that is much steeper and higher than the surrounding waves. These rogue waves often occur in a stormy sea and are described by mariners who have experienced them, as coming out of nowhere and disappearing just as quickly. If significant wave heights are observed at 20 feet (6 m) then a rogue wave could reach 50 feet (15 m) if the water depth could support it.

(254) In general, sea conditions are roughest from about October through March or April. Seas of 8 feet (>2 m) or more can be expected along deep water coastal routes north of Florida about 15 to 30 percent of the time and 5 to 15 percent of the time off Florida.

(255) Steep waves are often more dangerous than high waves with a gentle slope. Waves appear menacing when the ratio of wave height to length reaches about 1/18. They begin to break when this ratio is about 1/10. Steepest waves develop when strong winds first begin to blow or early in a storm's life. The ship no longer rides easily but is slammed. Steep waves are particularly dangerous to small craft. When wave heights are greater than 5 feet (1.5 m), periods of less than 6 seconds can create problems for boats under 100 feet (30 m) in length. Waves of 10 feet (3 m) or more with periods of 6 to 10 seconds can affect comfort in vessels 100- to 200-feet (30 to 60 m) in length and provide a rough ride for larger ships.

(256) Waves moving into shallow water become steeper and break when the depth is about 1.3 times the wave height. Areas such as Diamond Shoals and Mantilla Shoal are dangerous in heavy weather as are most of the inlets along this coast. Wave steepness is also increased by tidal currents, particularly when they oppose the wind.

(257) Swells can create problems for larger vessels. About one-half of the waves of 10 feet (3 m) or more, in these waters, are swells from distant storms. They are uncomfortable to ships that roll or pitch in sympathy. Swells with 500- to 1,000 foot (152 to 305 m) wave lengths affect ships of these lengths. When steaming into such swells a resonance is set up until the bow digs into the waves. The resulting pitch will cause more of a power loss than a roll caused by a sea. Swells with wave lengths that range from about three-fourths to twice the ship's length can have this effect. Pitching is heaviest when the ship's speed produces synchronism between the period of encounter and the ship's natural pitching period. This often occurs at or near normal ship speeds.

(258) When running before a following sea the greatest danger arises when your speed is equal to that of the waves or when the waves overtake the ship so slowly that an almost static situation is created with the vessel lying on the wave crest. In this latter case, stability is so reduced that a small vessel could capsize. Waves on the quarter or astern can also result in very poor steering quality. As seas move along the vessel from aft to forward the rudder is less effective and the boat may be slewed across the face of a sea filling the decks with water as she broaches. She could lose her stability and capsize, particularly if the boat is trimmed by the head.

(259) The Gulf Stream not only affects the winds of coastal storms but modifies waves by their interaction with the currents. This interaction is enhanced in the North Wall, a narrow, horizontal band of extreme water temperature change marking the north edge of the Gulf Stream. The North Wall also indicates the region where strong northeasterly currents will be encountered; they reach a maximum value 10 to 20 miles (19 to 37 km) farther into the Gulf Stream. Particularly during February and March, when water temperature gradients are steepest to the north, a coastal storm may draw cold Arctic air across the slope water and along the coast to Cape Hatteras by strong northeasterly winds.

(260) An 18° to 20°F (10° to 11°C) jump in water temperature occurs creating highly unstable air and increased surface winds with more gustiness and turbulence. Higher waves are generated by the windspeed increase and these waves are likely to be more confused due to the turbulence. In addition to this wave height increase, more serious changes in the wave characteristics are produced by the currents. Northeasterly seas encounter opposing currents of from 3 to 5 knots and, as is commonly observed in inlets when incoming waves encounter an ebbing tide, the result is sharply increased wave heights and much steeper wave slopes. If the opposing current is sufficiently strong the waves will even break. This steepening action causes problems for small craft navigating inlets with waves only a few feet high; with 20- to 30-foot (6 to 9 m) waves the result may be dangerous to any ship.

(261) To avoid this problem it is suggested that in late winter and spring cross the Gulf Stream as far east as possible, where it is likely that the cold air would have modified somewhat and thus reduce the instability effect.

### Visibilities

(262) Visibilities are generally good throughout the year, particularly offshore south of Charleston. Fog is the principal restriction to visibility. Onshore and along

the coast this is often a radiation type fog, which forms shortly after sunset on cool, calm, clear nights. These fogs generally do not extend any great distance seaward, but may seriously restrict harbor activities. They often burn off during the morning hours. Sea fogs occasionally drift onshore on hot summer days, persisting for many hours in a shallow layer along the coast. Foggy conditions vary widely at coastal locations depending upon exposure. In general, the number of days that visibilities fall to ¼ mile or less ranges from 20 to 40 days annually, north of Cape Canaveral. These conditions are most likely from October through April.

(263) West of the Gulf Stream sea fog may occur over cooler waters when warm air is brought in from the south. These conditions are most likely over coastal waters from Norfolk to Charleston during January, February and March. During these months visibilities drop below ½ mile on 1 to 5 percent of all ship observations. Conditions are worst from Cape Henry to Cape Hatteras. In addition to fog, precipitation occasionally reduces visibility over both land and water while haze and smoke sometimes restrict it over land.

### Winds

(264) Along most of the southern Atlantic Coast, winds are determined by migratory high and low pressure systems; in summer the semipermanent Azores High is an important factor. Most of the Florida coast lies in the easterly trade wind system at least part of the year. Other influences include the Appalachian Mountains and local coastal topography. Strongest winds are generated by the tropical and Extratropical low pressure systems and cold fronts. Locally, thunderstorms can cause short periods of strong, gusty winds.

(265) In the offshore waters, gales are most likely from October through April. North of about 30°N., along the coastal routes, they can be expected 5 to 10 percent of the time. Winds are variable although those with northerly and westerly components are most frequent. To the south, gale frequencies drop off to about 5 percent or less, decreasing with latitude; south of 30°N., winds in the 22- to 33-knot range are encountered about 10 to 15 percent of the time. Winds are variable but southwesterlies through northeasterlies are common. Easterlies become increasingly frequent south of Jacksonville. Summer winds in offshore waters are steadier but weaker, mainly due to the dominance of the Azores High. North of 30°N., southerlies and southwesterlies prevail. Gales are infrequent and even windspeeds in the 22- to 33-knot range occur less than 10 percent of the time. South of Jacksonville, easterlies and southeasterlies predominate with average speeds of about 8 to 10 knots. It isn't usually until late September, when the Azores High recedes, accompanied by an increase in migratory pressure systems, that winds become stronger and more variable.

(266) Coastal winds are more complex due to topographical influences and the land-sea breeze effect. Along the coast a daily shift in wind direction is often observed. During the warmest part of the day winds blow from the ocean toward shore (known as a sea breeze), and during the coolest, from the land toward the sea (land breeze). Offshore winds, unless they are exceptionally strong, are generally considered most favorable for coastal navigation. Onshore winds have a more pronounced effect upon the surface, particularly when they have been blowing from the same direction for a long period of time. A strong sea breeze can cause heavy or choppy seas and swells, and frequently makes navigation difficult for small vessels.

(267) Windspeeds along the southeastern coast of the U.S. are generally moderately light, averaging 8 to 12 knots over the year. Monthly averages vary in summer from 6 to 10 knots and 8 to 15 knots in winter. Wide departures from these averages should be expected in all seasons. In the immediate coastal area, the windward side of the promontories may be lashed by gales and heavy seas, while the lee side is relatively protected. Averages do not show these variations. The area from Cape Hatteras to Cape Henry, exposed as it is to the ocean, is subject to severe northeasterly ocean storms as well as migratory continental pressure systems. Cape Hatteras is particularly exposed to the winds, with open sea from north through east to southwest. South of Cape Hatteras gales are much less frequent, occurring generally on less than 15 days annually. The frequency of calms is dependent upon season, exposure, and time of day. They are least frequent during the afternoon when they occur less than 5% of the time along the entire southeastern Atlantic coast; in many locations calms are recorded less than 2% of the time. During the morning hours, particularly in summer and fall, they occur 5 to more than 15% of the time. Calms are least frequent at Cape Hatteras. Daytona Beach records the largest range in July, August and September, when morning calms occur about 25% of the time, compared to less than 2% of the time during the afternoon.

(268) Extreme windspeeds are a hazard in any month. Though winds greater than 34 knots are infrequent, they have been recorded all along the southeastern U.S. coast almost any time of the year. Gales usually accompany sharply defined frontal systems, tropical storms, hurricanes and severe local thunderstorms.

### Temperature

(269) The temperature regime of the southern Atlantic coast varies from temperate in the north to subtropical in the south. The gradation from north to south is regular, increasing with decreasing latitude. Another interesting variation is the general modification process of the ocean and coastal temperatures by each other. Along the coast, sheltered land stations have warmer summers and cooler winters than stations with greater exposure to the water.

(270) Temperatures along the southeastern seaboard region are conducive to a long season of small-craft

operation. The southern Atlantic coast annual mean air temperatures range from 59.5°F (15.3°C) at Norfolk, VA, to 77.7°F (25.4°C) at Key West, FL. January is the coldest month at most stations; July the warmest. Mean monthly air temperatures range from 39.9°F (4.4°C) at Norfolk in January to 84.5°F (29.2°C) at Key West in July.

(271) Over the water the coldest month is February and the warmest is August. Exposed coastal stations experience mean air temperatures more like those over the water. The daily variation in temperature ranges from 10° to 17°F (5.6° to 9.5°C) at coastal stations throughout the year and is less over the water. The largest daily variation occurs during the winter and early spring and the smallest during late summer and fall.

(272) Very little data on extreme temperatures for the ocean areas are available. At coastal stations temperatures above 100°F (37.8°C), while not common, have been recorded. The highest during the period of record considered was 105°F (40.6°C) at Jacksonville, FL, in July. The lowest recorded temperature was 5°F (-15°C) at Norfolk, VA, in January.

### Precipitation

(273) Along the southeastern Atlantic coast precipitation is moderately heavy, averaging about 45 to 60 inches (1,143 to 1,524 mm) a year. Monthly departures may be large in any individual year, but over a long period of record, a fairly uniform pattern prevails. Since the area is within both temperate and subtropical regions, the precipitation pattern shows differences in both type and amount from north to south. Irregularities are often due to differences of exposure at the observing stations. Year-to-year variation is caused by overall departures from the average, general circulation.

(274) In the northern part of the area, maximum rainfall occurs normally during July and August, with a minimum in November. In the southern section, however, maximums occur in September or October, and the least in February. Average monthly totals at most stations range from 2 to 6 inches (51 to 152 mm) throughout the year. During the months of greatest hurricane frequency, excessive rains of 9 to 15 inches (229 to 381 mm) in a 24-hour period have recorded. These may occur at any point along the coast, but are most common in the southern part of the area.

(275) The monthly mean number of days with 0.01 inch (0.254 mm) or more of precipitation in the northern part of the area ranges from about 8 days per month in the fall to 10 to 12 days per month in the summer and winter. In the central part of the area the most rainy days are in summer, 11 to 16 days per month, and the least in spring and fall, 6 to 9 days per month. The most rainy days along the Florida coast, 14 to 18 days per month, generally occur in late summer and early fall, and the minimum number, 5 to 8 days per month, from February through April.

(276) Much of the precipitation, like cloudiness, is associated with cyclonic activity throughout the year. During the winter, precipitation is usually steady, but may come with an occasional thunderstorms along a front. Frontal systems originating or developing in the Gulf region result from the interaction of a moist tropical air mass with colder continental masses. They move eastward or northeastward and bring extensive precipitation to the seaboard region. During the summer, when the area is dominated by the Azores High and cumulus clouds predominate, precipitation is localized and is showery in nature. Heaviest precipitation occurs over land and near coastal waters in the afternoon; over open water it is most likely during the night.

(277) Thunderstorms along the coast occur on an average of from 40 days per year in the north to 80 days per year in the south. Maximum occurrence is from June through August, and an average of 7 to 18 thunderstorms per month occur during this season. In summer, cumulus clouds frequently develop into thunderstorms over the land and drift seaward late in the afternoon.

(278) Snow falls from December through March in the northern part of the area on 1 or 2 days per month. So far as coastal operations are concerned, snow conditions are not significant since most of the area is entirely free from snow the year-round.

### Cloudiness

(279) Mean cloudiness over the area is moderate to moderately high throughout the year, averaging from 35 to 65 percent sky cover. In general, however, the cloudiest month is January in the northern sections and over most of the water areas, and may be any month from June through September in the south. At most locations in the north the least cloudiness occurs in October, and in the extreme southern part in February or March. Since the air is usually moist, only a small decrease in temperature may cause condensation and cloud formation. At the edge of the warm, northward moving Gulf Stream and the cool southward moving countercurrent which skirts the shore from Cape Hatteras, N.C. to Jacksonville, Fla., sharp contrasts in temperatures result in the formation of heavy stratus clouds which may appear very much as a cold front. These clouds may persist for days at a time if the wind is light and may be carried inland by northeasterly winds. Such cloudiness is common during the spring when the gradient between shore water and Gulf Stream temperatures are steepest. The fact that maximum cloudiness for the year occurs during the winter at the northern coastal stations may be explained by the maximum frequency of storms passing northward or northeastward from the central or south-central section during the season. These rarely affect the extreme southern part of the area.

(280) Much of the cloudiness over the entire area is of the cumulus type, resulting from either the unstable conditions that accompany cyclonic activity in all seasons, or the general air mass instability during the summer.

Such clouds frequently form over land during the day and drift seaward at night.

### Immersion Hypothermia

(281) Immersion hypothermia is the loss of heat when a body is immersed in water. With few exceptions, humans die if their normal rectal temperature of approximately 99.7°F drops below 78.6°F. Cardiac arrest is the most common direct cause of death. Except in tropical waters warmer than 68° to 77°F, the main threat to life during prolonged immersion is cold or cold and drowning combined.

(282) Cold lowers body temperature, which in turn slows the heartbeat, lowers the rate of metabolism, and increases the amount of carbon dioxide in the blood. Resulting impaired mental capacity is a major factor in death by hypothermia. Numerous reports from shipwrecks and accidents in cold water indicate that people can become confused and even delirious, further decreasing their chances of survival. The length of time that a human survives in water depends on the water temperature and, to a lesser extent, on a person's behavior. The table below shows the approximate human survival time in the sea. Body type can cause deviations, since thin people become hypothermic more rapidly than fat people. Extremely fat people may survive almost indefinitely in water near 32°F if they are warmly clothed.

**SURVIVAL TIME VERSUS WATER TEMPERATURE**

| Water Temperature (°F) | Exhaustion or Unconsciousness | Expected Time of Survival |
|---|---|---|
| 32 | 15 minutes | 15 to 45 minutes |
| 32 to 41 | 15-30 minutes | 30 to 90 minutes |
| 41 to 50 | 30-60 minutes | 1 to 3 hours |
| 50 to 59 | 1-2 hours | 1 to 6 hours |
| 59 to 68 | 2-7 hours | 2 to 40 hours |
| 68 to 77 | 3-12 hours | 3 hours to indefinite |
| 77 and above | indefinite | indefinite |

(283) The cooling rate can be slowed by the person's behavior and insulated gear. In a study which closely monitored more than 500 immersions in the waters around Victoria B.C., temperatures ranged from 39° to 60°F. Using this information it was reasoned that if the critical heat loss areas could be protected, survival time would increase. The Heat Escape Lessening Posture (HELP) was developed for those in the water alone and the Huddle for small groups. Both require a life preserver. HELP involves holding the upper arms firmly against the sides of the chest, keeping the thighs together, and raising the knees to protect the groin area. In the Huddle, people face each other and keep their bodies as close as possible. These positions improve survival time in 48°F water to 4 hours, approximately two times that of a swimmer and one and one-half times that of a person in the passive position. The U.S. Coast Guard has an easy to remember rule of thumb for survival time: 50 percent of people submersed in 50°F water, will die within 50 minutes.

(284) Near-drowning victims in cold water (less than 70°F) show much longer periods of revivability than usual. Keys to a successful revival are immediate cardiopulmonary resuscitation (CPR) and administration of pure oxygen. Don't bother with total rewarming at first. The whole revival process may take hours and require medical help. Don't give up!

### Wind Chill and Frostbite

(285) When the body is warmer than its surroundings it begins to lose heat. The rate of loss depends on barriers such as clothing and insulation, the speed of air movement and the air temperature. Heat loss increases dramatically in moving air that is colder than skin temperature (91.4°F). Even a light wind increases heat loss while a strong wind can actually lower the body temperature if the rate of loss is greater than the body's heat replacement rate.

(286) The equivalent wind chill temperature relates a particular wind and temperature combination to whatever temperature would produce the same heat loss at about 3 knots, the normal speed of a person walking. At extremely cold temperatures, wind and temperature effect may account for only two-thirds of the heat loss from the body. For example, in 40°F temperatures about one-third of the heat loss from the body occurs through the lungs in the process of breathing. On the other hand, heat loss is not as great in bright sunlight.

(287) When the skin temperature drops below 50°F, there is a marked constriction of the blood vessels leading to vascular stagnation, oxygen want, and some cellular damage. The first indication that something is wrong is a painful tingling. Swelling of varying extent follows, provided freezing has not occurred. Excruciating pain may be felt if the skin temperature is lowered rapidly, but freezing of localized portions of the skin may be painless when the rate of change is slow. Cold allergy is a term applied to the welts which may occur. Chilblains usually affect the fingers and toes and appear as reddened, warm, itching, swollen patches. Trench foot and immersion foot present essentially the same picture. Both result from exposure to cold and lack of circulation. Wetness can add to the problem as water and wind soften the tissues and accelerate heat loss. The feet swell, discolor, and frequently blister. Secondary infection is common and gangrene may result.

(288) Injuries from the cold may, to a large extent, be prevented by maintaining natural warmth through the use of proper footgear and adequate, dry clothing; by avoiding cramped positions and constricting clothing; and by active exercise of the hands, legs and feet.

(289) Frostbite usually begins when the skin temperature falls within the range 14 to 4°F. Ice crystals form in the tissues and small blood vessels. Once started, freezing proceeds rapidly and may penetrate deeply. The rate

of heat loss determines the rate of freezing, which is accelerated by wind, wetness, extreme cold, and poor blood circulation. Parts of the body most susceptible to freezing are those with surfaces large in relation to their volume, such as toes, fingers, ears, nose, chin and cheeks.

### Dew Point

(290) The temperature at which condensation to water droplets occurs is called the dew point. If this dew point is above freezing, condensation will be in the form of water. When the dew point reaches freezing, ice crystals will be deposited on cold surfaces. Knowledge of the dew point along the cargo temperature and moisture content is vital for hold ventilation decisions. It is also a parameter used in forecasting fog formation.

### Cargo Care

(291) When free air has a dew point temperature higher than the temperature of the surface with which it comes in contact, the air is often cooled sufficiently below its dew point to release moisture. When this happens on board ship, condensation will take place on relatively cold cargo or on the ship's structure within the hold where it later drips onto the cargo. Thus, if cargo is stowed in a cool climate and the vessel sails into warmer waters, ventilation of the hold with outside air will likely lead to sweat damage in any cargo sensitive to moisture. Under such conditions external ventilation should, as a rule, be closed off entirely, unless the cargo generates internal heat, that hazard being greater than sweat damage. In the opposite case, when a vessel is loaded during a warm period, and moves into cooler weather, vulnerable cargo should be ventilated.

(292) A safe rule for ventilation directed toward moisture control may be stated as follows: Whenever accurate measurements show the outside air has a dew point below the dew point of the air surrounding the cargo to be protected, such outside air is capable of removing moisture from the hold and the ventilation process can be safely started. Whenever the reverse is true, and the outside dew point is higher than the dew point temperature around the cargo, then ventilation will increase the moisture content of the hold and may readily result in sweating within the ship. The above does not take into account possible fumes or gases in the compartment. In such case discretion must be used.

### Principal ports

(293) The ports within the area of this Coast Pilot which have deep-draft commercial traffic are Morehead City, NC; Wilmington, NC; Georgetown, SC; Charleston, SC; Port Royal, SC; Savannah, GA.; Brunswick, GA.; Fernandina Beach, FL.; Jacksonville, FL.; Port Canaveral, FL.; Fort Pierce, FL.; Port of Palm Beach (near West Palm Beach), FL.; Port Everglades (Fort Lauderdale), FL; Miami, FL.; and Key West, FL. The larger ports of the group are Wilmington, Charleston, Savannah, Jacksonville, Port Everglades, and Miami. Jacksonville is the largest port on the east coast south of Hampton Roads and is a major ship repair center.

### Pilotage, general

(294) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in the foreign trade at the ports where state pilots are available. Pilotage is optional for coastwise vessels who have on board a pilot properly licensed by the Federal Government. Only at Wilmington, Charleston, Savannah, and Jacksonville is there a pilot station which is manned 24 hours daily; at the other ports, arrangements for pilots must be made well in advance. Detailed information on pilotage procedures is given in the text for the ports concerned.

(295) Local boatmen or fishermen competent to act as pilots for parts of the Intracoastal Waterway and interior waters can usually be found at the larger cities and towns along the route or near the entrances to the various tributaries.

### Towage

(296) Tugs are available at most of the major ports; they can usually be obtained for the smaller ports on advance notice if none are available locally. Arrangements for tugs should be made in advance through the ships' agents or the pilots. See the text for the ports concerned as to the availability of tugs.

### Vessel Arrival Inspections

(297) Quarantine, customs, immigration, and agricultural quarantine officials are stationed in most major U.S. ports. (See Appendix A for addresses.) Vessels subject to such inspections generally make arrangements in advance through ships' agents. Unless otherwise directed, officials usually board vessels at their berths.

(298) **Harbormasters** are appointed for some of the principal ports. They have charge of enforcing harbor regulations, and in some instances are in charge of the anchorage and berthing of vessels.

### Supplies

(299) Fuel oil, diesel oil, and all other supplies and services for large vessels are available at Morehead City, Wilmington, Charleston, Savannah, Jacksonville, Port Everglades, and Miami. Fuel oil and diesel oil are available locally, or can be barged or trucked in from another port, at Georgetown, Port Royal, Brunswick, Fernandina Beach, Fort Pierce, Port of Palm Beach, and Key West; other supplies and services for ships are limited at these ports.

### Repairs

(300) Large oceangoing vessels can be drydocked and have major repair work done at Cainhoy (Near Charleston), Savannah and Jacksonville with the largest drydock capacity of 33,000 tons (Jacksonville). Smaller

vessels from 300 to 1,200 tons may also be drydocked at New Bern, Wilmington, Johns Island, Mayport, Miami, and at Safe Harbor. (See text for details.)

### Small-craft facilities

(301) Supplies, and repair facilities for small craft are at all the ports and at numerous places along the Intracoastal Waterway and on the tributaries branching from it. For isolated places and small cities, the Coast Pilot describes the more important of these facilities; for large port areas, where individual facilities are too numerous to mention, the information given is more general. Additional information may be obtained from the series of small-craft charts published for the many places, and from various local small-craft guides.

(302) **A vessel of less than 65.6 feet (20 meters) in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway. (Navigation Rules, International-Inland Rule 9(b).)**

### Standard time

(303) The area covered by this Coast Pilot uses eastern standard time (e.s.t.), which is 5 hours slow of Greenwich mean time (G.m.t.). Example: When it is 1000 at Greenwich it is 0500 along this coast.

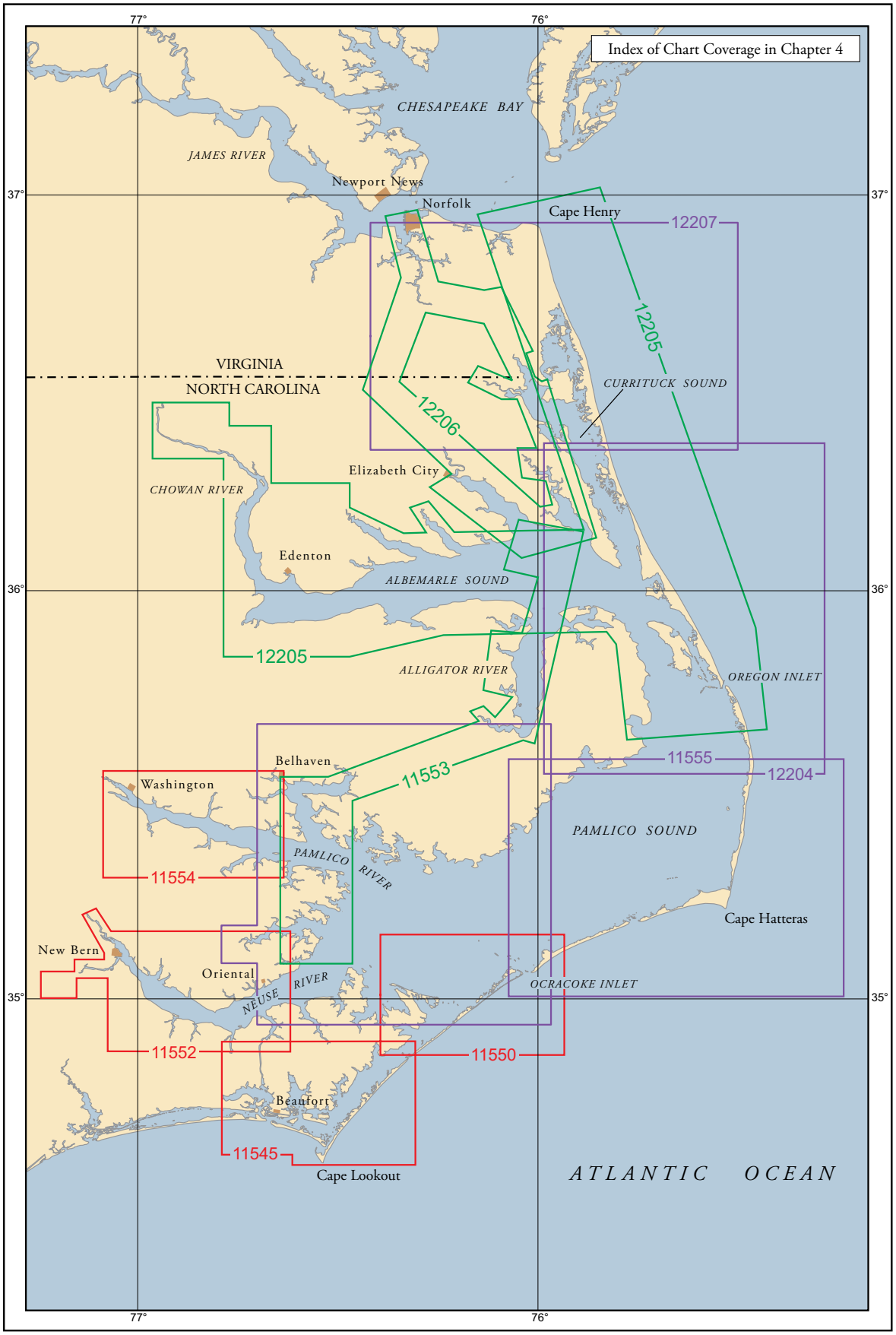
### Daylight saving time

(304) Throughout the area of this Coast Pilot, clocks are advanced 1 hour on the second Sunday of March and are set back to standard time on the first Sunday of November.

### Legal public holidays

(305) New Year's Day, January 1; Martin Luther King, Jr.'s Birthday, third Monday in January; Washington's Birthday, third Monday in February; Memorial Day, last Monday in May; Independence Day, July 4; Labor Day, first Monday in September; Columbus Day, second Monday in October; Veterans Day, November 11; Thanksgiving Day, fourth Thursday in November; and Christmas Day, December 25. The national holidays are observed by employees of the Federal Government and the District of Columbia, and may not be observed by all the states in every case.

(306) In the areas covered by this Coast Pilot, other holidays are observed: Lee-Jackson Day, third Monday in January, in Virginia; Robert E. Lee's Birthday, January 19, in all states except Virginia; Arbor Day, third Friday in January, Florida; Good Friday, Florida; Easter Monday, North Carolina; April 2, Pascua Florida Day, Florida; April 12, Halifax Day, North Carolina; April 14, Pan American Day, Florida; April 26, Confederate Memorial Day, Georgia and Florida; May 10, Confederate Memorial Day, North Carolina and South Carolina; May 20, Mecklenburg Day, North Carolina; June 3, Jefferson Davis' Birthday, South Carolina, Georgia, and Florida; General Election Day, first Tuesday after the first Monday in November, all states.


Index of Chart Coverage in Chapter 4
77°
76°
37°
36°
35°
CHESAPEAKE BAY
JAMES RIVER
Newport News
Norfolk
Cape Henry
12207
12205
VIRGINIA
NORTH CAROLINA
CURRITUCK SOUND
12206
Elizabeth City
CHOWAN RIVER
Edenton
ALBEMARLE SOUND
12205
ALLIGATOR RIVER
OREGON INLET
Belhaven
11553
11555
12204
Washington
PAMLICO SOUND
PAMLICO RIVER
11554
Cape Hatteras
New Bern
Oriental
NEUSE RIVER
OCRACOKE INLET
11552
11550
Beaufort
11545
Cape Lookout
ATLANTIC OCEAN

# Cape Henry to Cape Lookout

## Charts 12200, 11520

(1) This chapter describes a 190-mile section of the Virginia and North Carolina coastline between Cape Henry and Cape Lookout, known as The Outer Banks, and the series of sounds and tributary waters behind the banks through which the Intracoastal Waterway passes from Chesapeake Bay southward. The Outer Banks, a line of long, low, and narrow islands, include the Portsmouth Islands, the uninhabited Core Banks, and Bodie, Hatteras, and Ocracoke Islands, parts of which comprise the Cape Hatteras National Seashore. The Intracoastal Waterway is described in chapter 12.

(2) There are no deepwater ports along this stretch of the coast. Oregon, Hatteras, and Ocracoke Inlets provide the main entrances to the shallow, sandy-bottom waters behind The Outer Banks. These inlets are used principally by fishing vessels.

(3) Discussed in this chapter are the waters of Albemarle Sound and its tributaries Little, Perquimans, Chowan, and Roanoke Rivers, and the towns of Hertford, Edenton, and Plymouth; Croatan and Roanoke Sounds, Roanoke Island, and the towns of Kitty Hawk, Nags Head, Manteo, and Wanchese; Pamlico Sound and the towns of Rodanthe, Avon, Buxton, Hatteras, and Ocracoke which are on the western side of The Outer Banks; Pamlico River and the towns of Swanquarter, Bath, and Washington; Neuse River and the town of New Bern; and Core Sound, Cedar Island, and the towns of Atlantic, Sealevel, Davis, and Marshallberg. These ports and waters support considerable traffic in barges and pleasure craft, and a large fishing and boatbuilding industry.

(4) There are many off-lying shoals and other hazards along this coast including Diamond Shoals and Cape Lookout Shoals. Deep-draft vessels should give these dangers a wide berth.

(5) Many **restricted** and **danger areas** are located offshore and in the inland waters. (See **165 and 334**, chapter 2 for rules and regulations.)

(6) The low sandy beaches of the coastline do not present any good radar targets. However, four Navy-maintained offshore towers, 16 to 32 miles east to northeast of Oregon Inlet, are reported to be prominent and to be good radar targets. The towers, each 72 feet high and marked by lights and sound signals, are in about

(7) 35°57'00"N., 75°15'58"W.;

(8) 36°13'35"N., 75°15'01"W.;

(9) 36°03'53"N., 74°58'59"W.; and

(10) 35°47'11"N., 75°05'42"W.

(11) **The Traffic Separation Scheme at the entrance to Chesapeake Bay is described in United States Coast Pilot 3, Atlantic Coast–Sandy Hook to Cape Henry.**

### North Atlantic Right Whales

(12) Endangered North Atlantic right whales are often seen within 30 miles of the Virginia and North Carolina coasts from November through April. (See **North Atlantic right whales**, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.)

(13) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in Seasonal Management Area existing around the entrance to the Chesapeake Bay and the Ports of Morehead City and Beaufort, North Carolina between November 1 and April 30. The areas are defined as the waters within a 20-nm radius of 37°00'36.9"N., 75°57'50.5"W. (Chesapeake Bay) and 34°41'32.0"N., 76°40'08.3"W. (Morehead City and Beaufort). (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.)

### COLREGS Demarcation Lines

(14) The lines established for this part of the Virginia and North Carolina coasts are described in **80.515 and 80.520**, chapter 2.

(15) **Weather, Cape Henry to Cape Lookout and vicinity**. This stretch of coast is subject to strong winds and rough seas from both tropical and extratropical storms and occasionally to dense, spring, sea fog which hugs coastal routes landward of the Gulf Stream. Rough weather and numerous shoals have combined to give the seas off the Outer Banks the reputation of "Graveyard of the Atlantic."

(16) Winter (November through April) provides the greatest likelihood of rough weather, due to the frequent extratropical storms. Fueled by the Gulf Stream, about 3 to 6 storms per month affect these waters. Their predominant movement is toward the northeast or east at 25 to 30 knots. Not all of these systems are severe weather producers, but, in winter, gales blow about 5 percent of the time near Diamond Shoals and up to 10 percent to the east and northeast. From December through March, seas of 8 feet (2.4 m) or more are encountered about 20 to 25 percent of the time near Diamond Shoals and even more often to the east. Conditions improve somewhat in other directions. Maximum wave heights have been

estimated at more than 40 feet (12 m). Steep waves of 5 feet or more (1.5 m) with periods of less than 6 seconds are uncommon. However, those of 5 feet or more (1.5 m) with 6- to 9-second periods occur about 30 percent of the time creating problems for vessels in the 100- to 400-foot (31 to 122 m) range. Winter storms also produce rain and snow which can hamper visibility along the routes through this region. Visibilities drop below 0.5 mile (<0.9 km) less than 3 percent of the time, except in late winter and spring.

(17) During March, April and May the air is often warmer than the water between Cape Charles and Oregon Inlet, sometimes creating sea fog; visibilities drop below 0.5 mile (<0.9 km) about 2 to 5 percent of the time in spring. Farther out to sea the warmer Gulf Stream inhibits fog formation. To the south, fog occasionally develops west of the Gulf Stream.

(18) Tropical cyclones, while infrequent, can create havoc when they strike. Hurricanes are most likely along this coast during August and September.

(19) In addition to winds of 100 knots or more and waves of 30 feet (9 m) or more, hurricanes can generate extreme storm tides, which cause damage to coastal facilities. These tides can also occur in severe extratropical storms. From the Virginia-North Carolina border to Cape Lookout it has been estimated that in an average 100-year period, tides could reach 8 to 10 feet (2.4 to 3 m) above mean sea level. South to the North Carolina-South Carolina border, they could reach 10 to a little more than 13 feet (3 to 4 m) above mean sea level.

## Charts 12207, 12205

(20) The summer resort of **Virginia Beach** is about 5 miles southward of Cape Henry Light. Many high-rise buildings and two water tanks are prominent. Some of these are lighted at night. A hotel cupola, 3.4 miles south of Cape Henry Light, is distinctive.

(21) **Rudee Inlet**, at the southern end of Virginia Beach and about 6 miles south of Cape Henry Light, is protected by two jetties at the entrance. A dredged channel leads between the jetties to a basin just inside the jetties, thence westward to a safety area about 0.2 mile above the jetties, thence northwestward to Lake Rudee. While dredging operations attempt to maintain Rudee Inlet channel to a depth of 10 feet, the inlet is subject to continual shoaling. (See Notice to Mariners and latest editions of charts for controlling depths.) Rudee Inlet is marked by lighted buoys and a light. A lighted whistle buoy is about 1 mile east-northeast of the jetties.

(22) The inlet leads northward to **Lake Rudee**, and southward to **Lake Wesley.** Two fixed highway bridges with a least clearance of 28 feet crosses the arm of the inlet leading to Lake Rudee. Several overhead power and telephone cables with a least known clearance of 54 feet cross eastward of the bridge. A municipal marina and two private marinas are on the north shore of Lake Rudee west of the bridge. Berths, electricity, gasoline, diesel fuel, water, ice, and marine supplies are available; engine and electrical repairs can be made.

### Local magnetic disturbance

(23) Differences of as much as 6° from the normal variation have been observed 3 to 17 miles offshore from Cape Henry to Currituck Beach Light.

(24) A **naval restricted area** extends northward, eastward, and southeastward from Cape Henry. (See **334.320**, chapter 2, for limits and regulations.)

(25) A **naval prohibited area** is off Camp Pendleton, 7.4 miles southward of Cape Henry. (See **334.400**, chapter 2, for limits and regulations.)

(26) **Danger zones of naval firing ranges** are about 8 and 9 miles southward of Cape Henry. (See **334.380 and 334.390**, chapter 2, for limits and regulations.)

(27) Two radar towers and a blue water tank, 158 feet above the water, are prominent at the Dam Neck Naval Station about 9 miles southward of Cape Henry Light.

(28) **Sandbridge Beach,** about 11 miles south of Cape Henry Light, has a tower and a green water tank that are prominent. There are about 3 miles of beach residences south of Sandbridge Beach.

(29) Part of Back Bay National Wildlife Refuge extends from 15 to 18.5 miles south of Cape Henry Light along The Outer Banks.

(30) **False Cape**, so called because of its resemblance to Cape Henry when approaching from southward, is about 22 miles southward of Cape Henry Light. Several spots with depths of 10 to 17 feet are 0.8 to 1.5 miles offshore from False Cape.

(31) Sand dunes in this area have a tendency to alternately erode and then build up again as the seasons change, generally working to the southward; they should not be depended upon as navigational marks.

## Charts 12204, 12205

(32) **Currituck Beach Light** (36°22'37"N., 75°49'47"W.), 158 feet above the water, is shown from a red conical tower on the beach near the settlement of **Corolla**.

### Local magnetic disturbance

(33) Differences of as much as 11° from the normal variation have been observed 5 to 7 nautical miles offshore from Currituck Beach Light to Wimble Shoals (36°22.6'N., to 35°35.0'N.).

(34) Many homes are prominent along the beach from **Duck** to **Whalebone**, 17 miles and 31 miles south of Currituck Beach Light, respectively. A conspicuous steel tower is just eastward of Kitty Hawk, 20 miles southward of Currituck Beach Light. **Wright Monument**, a high stone memorial on the highest of the **Kill Devil Hills**, 3.5 miles southward of Kitty Hawk, is very prominent and is a good landmark on this low sandy coast. Water tanks at Kill Devil Hills and Nags Head, 1 mile

north and 5.6 miles south of Wright Monument, respectively, are also prominent.

(35) **Bodie Island Light** (35°49'07"N., 75°33'48"W.), 156 feet above the water, is shown from a conical tower, with alternate white and black horizontal bands above the granite base, about 2 miles northward of the southern end of Bodie Island, and 36 miles southward of Currituck Beach Light. A water tank 1.2 miles north of Bodie Island Light is prominent.

(36) **Oregon Inlet**, about 2.5 miles southward of Bodie Island Light, is entered over a shifting bar. A lighted whistle buoy marks the approach; other buoys, not charted, are frequently shifted in position to mark the best water. A fish haven is about 4.5 miles southeast of the lighted whistle buoy. The inlet, used by local fishing vessels, but not recommended to strangers, requires continuous dredging; it deepens with northwest winds and fills in with northeast winds.

### Currents

(37) Tidal currents in the inlet are reported to be as much as 5 knots, but with southwesterly winds as much as 6 to 8 knots.

(38) The Herbert C. Bonner (State Route 12) highway bridge crosses the inlet; the fixed channel span has a clearance of 65 feet over the main channel. **Oregon Inlet Jetty Light** (35°46'26"N., 75°31'30"W.), 28 feet above the water, is shown from a pile with a black and white diamond-shaped daymark.

(39) Three marked dredged channels with a Federal project depth of 12 feet lead from Oregon Inlet into Pamlico Sound. **Oregon Inlet Channel** leads westward from the inlet to a junction with **Old House Channel**, which then leads southwestward into Pamlico Sound. From the junction, the inlet channel continues northward to a junction with **Roanoke Sound Channel**, which continues northward to a turning basin at Manteo. A side channel of the same project depth leads westward to a turning basin at Wanchese at the south end of Roanoke Island. A connecting channel with a project depth of 6 feet continues northward into Albemarle Sound from the north end of the Roanoke Sound Channel. (See Notice to Mariners and latest editions of charts for controlling depths.)

(40) On the southern end of Bodie Island, just west of the bridge, there is a National Park Service small-boat basin operated by a concessionaire and the **Oregon Inlet Coast Guard Station**. A channel, marked by lights, buoys, and daybeacons, leads east-northeastward passing through **Walter Slough**, ending at the small-boat basin. A 150-foot radio tower at the Coast Guard Station can be seen from the approach. In 2011, the controlling depth was 3.2 feet in the channel with 4.4 feet in the basin.

(41) **Pea Island**, on the south side of the entrance to Oregon Inlet, and the waters to the westward of the island, have been designated as a **National Wildlife Refuge**. Pea Island is the northern extension of Hatteras Island.

(42) **Roanoke Island**, close westward of Bodie Island, separates Roanoke Sound on the east from Croatan Sound on the west.

(43) **Wanchese** is a small town near the south end of Roanoke Island west of the entrance to **Mill Landing Creek (Mill Creek).** Gasoline, diesel fuel, water, limited marine supplies, and small charter boats can be obtained at the fishhouses and small docks. A 75-ton mobile lift in Mill Landing Creek can haul out boats to 120 feet for hull and engine repairs.

(44) Just south of Mill Landing Creek is a marine railway that can haul out craft up to 50 feet; there is a small-boat launching ramp.

(45) A marine railway that can handle craft up to 60 feet and a 25-ton mobile lift are on the unnamed creek on the western side of Roanoke Island opposite Mill Landing Creek, about 500 yards southward of Baum Creek. Berthage, electricity, gasoline, diesel fuel, water, and a surfaced launching ramp are available, and hull and engine repairs can be made.

(46) The Washington Baum highway bridge over Roanoke Sound connects Roanoke Island with Bodie Island and U.S. Route 64-264 highway to Norfolk. It has a fixed span with a clearance of 65 feet.

(47) An unnamed creek on Roanoke Island just north of the bridge is privately dredged with a controlling depth of 4.5 feet in 2006. A marina in the creek has transient berths, water, electricity, ice, diesel fuel, gasoline, pump-out station, and limited marine supplies.

(48) **Manteo**, the principal town on Roanoke Island and the seat of Dare County, is at the head of **Shallowbag Bay**, which indents the island near its northeast end. Berths, electricity, water, ice, diesel fuel, gasoline, a pump-out station, a marine railway that can handle craft to 35 feet in length, marine supplies, and a launching ramp are available in Manteo. Oil is barged into an oil terminal at Manteo.

(49) **Fort Raleigh National Historic Site** is at the northern end of Roanoke Island in **Fort Raleigh City**.

(50) **Nags Head** is a summer resort on the east side of Roanoke Sound, 3.5 miles northeastward of Manteo. Other inland waters are described in another section.

(51) **Platt Shoals**, consisting of several spots covered 30 to 39 feet, are east-southeastward of Oregon Inlet and 2.5 to 4 miles offshore. Between the shoals and the shoal water off the shore the depths are 30 to 71 feet. In easterly gales the shoaler spots are marked by breakers.

(52) **Wimble Shoals**. 15 miles southward of Oregon Inlet, are a number of ridges extending offshore about 4 miles, with depths ranging from 21 to 36 feet. In easterly gales the shoaler parts are marked by breakers. A lighted buoy is outside the shoals.

### Local magnetic disturbance

(53) Differences of as much as 8° from the normal variation have been observed in 35°32.0'N., 75°21.2'W. (chart 11555). Differences of as much as 3° from the normal

variation have been observed 6 to 12 miles offshore from Wimble Shoals to Cape Hatteras.

(54) A microwave tower at **Waves** about 12.8 miles southward of Oregon Inlet Light is a prominent object.

## Chart 11555

(55) **Cape Hatteras**, where the coast makes a sharp turn westward, is low and sandy. **Cape Hatteras Light** (35°15'02"N., 75°31'44"W.), 192 feet above the water, is shown from a black and white spirally banded tower on red brick base. About 1 mile northwest of Cape Hatteras Light, a telephone tower, a green water tower, and a radar sphere, in close proximity to each other, are prominent.

(56) **Weather, Cape Hatteras and vicinity**. Due to its maritime exposure and proximity to the Gulf Stream this area has a marine climate with an average of only five days when summer temperatures climb above 90°F (32.2°C); freezing temperatures are about one-half as frequent as at inland stations and average only 29 days each year. In addition, rain occurs on 8 to 12 days per month on the average. Rainfall reaches a maximum in July, August and September when it often occurs as brief, heavy showers or thunderstorms. Occasionally rains are prolonged and are associated with offshore storms, either tropical or extratropical. Both types can generate strong winds and extreme tides along the Outer Banks where the average elevation is less than 10 feet (3 m) above mean sea level.

(57) The average temperature for Cape Hatteras is 62.6°F (17°C). July is the warmest month with average extremes of 85°F (29.4°C) and 72°F (22.2°C). January is the coldest month with average extremes of 53°F (11.7°C) and 38°F (3.3°C). The warmest temperature on record is 96°F (35.6°C) recorded in July 1992. The coldest temperature on record is 6°F (-14.4°C) recorded in January 1985.

(58) The annual average precipitation is 57 inches (1,448 mm). The wettest month, August, averages 6.24 inches (158 mm) and the driest month, April, averages 3.27 inches (83 mm). Due to the coastal location, the annual average snowfall totals only two inches (51 mm). Historical distribution is relatively uniform for the months December through March, each averaging about one-half inch (13 mm). Snow has fallen in each month, November through April. The 24-hour record snowfall is 8.2 inches (208 mm) recorded in December 1989.

(59) Prevailing wind direction varies with the seasons. During the cooler season, prevailing winds are from the North through Northeast and during the summer, Southwest winds are dominate.

(60) Since 1842, 81 tropical systems have passed within 50 nautical miles of Cape Hatteras, North Carolina. The most infamous of recent time was Hurricane Gloria in 1985. Gloria passed nearly overhead on the morning of September 27th. Highest winds reported were 119 knots at Cape Point. Less than 48-hours earlier, the lowest pressure ever recorded in a North Atlantic storm had been documented by a reconnaissance aircraft (919 mb). Due to geographical orientation, nearly all tropical systems approach the coastline from the south or southeast.

(61) (See Appendix B for Cape Hatteras climatological table.)

(62) **Diamond Shoals** extend off Cape Hatteras in a southeasterly direction for about 9 miles. Depths of 3 feet have been found on the shoaler parts. Diamond Shoals include **Hatteras Shoals, Inner Diamond Shoal**, and **Outer Diamond Shoal.** Hatteras Shoals, with little water over them, are usually marked by breakers. Outer Diamond Shoal consists of irregular patches, with depths of 3 to 18 feet, which are usually marked by breakers. A buoy marks the east extremity of Outer Diamond Shoal.

### Caution

(63) Hydrography is not charted on Diamond Shoals due to the changeable nature of the area. Navigation in the area is extremely hazardous for all types of craft. During strong winds the currents set across the shoals with great velocity.

(64) The difficulty of making proper allowance for the Gulf Stream, and the strong currents near the shoals, may cause considerable error in the reckoning. When approaching in thick weather, and uncertain of the position, care should be taken to stay in at least 120 feet, or preferably 180 feet. Diamond Shoals Lighted Buoy 12 (35°09'05"N., 75°17'33"W.) marks the remaining structure of Diamond Shoals Light and is the guide for clearing the shoals.

(65) The submerged wreckage of the Civil War Ironclad **MONITOR**, about 7.7 miles south of the eastern limit of Diamond Shoals, has been designated **USS Monitor National Marine Sanctuary**, by the Secretary of Commerce. The sanctuary, administered by the Administrator, NOAA, Department of Commerce, is about 1 mile in diameter centered in 35°00'23"N., 75°24'32"W. (See **15 CFR 922**, chapter 2, for limits and regulations and Appendix C for additional information.)

(66) From Cape Hatteras to Cape Lookout the coast trends generally southwestward for 64 miles and is broken by several inlets. For 6 miles from Cape Hatteras it is thickly wooded near the beach, and between the woods and the beach is a range of sand dunes 10 to 40 feet high. For the remainder of the distance the coast is a narrow barrier beach with numerous sand dunes. The coast is fairly bold, and depths of 4 to 7 fathoms will be found within 0.5 mile offshore, except off Hatteras Inlet, where shoals extend out 1.2 miles, and off Ocracoke Inlet, where they make out 1.6 miles.

(67) **Hatteras Inlet**, 11 miles westward of Cape Hatteras Light, is entered over a shifting bar which is subject to continual change; local knowledge is recommended.

The approach is marked by a lighted whistle buoy; buoys marking the channel over the bar are not charted because they are frequently shifted in position. A 48-foot lookout tower showing a white light on the east side of the inlet is a conspicuous mark.

(68) **Hatteras**, a town 3 miles northeast of Hatteras Inlet, has several stores, a hotel, several motels, and restaurants. **Hatteras Inlet Coast Guard Station** is on **Austin Creek**, 0.8 mile southwest of the town. There are several small wharves in the basin at Hatteras where berths, gasoline, diesel fuel, and limited marine supplies can be obtained. A mobile lift can handle craft up to 45 feet for emergency repairs. Extensive repairs can be made at Wanchese.

(69) **Hatteras Inlet Channel** is a dredged channel that leads from Hatteras Inlet to **Rollinson Channel** in the vicinity of the basin entrance at Hatteras. The channel is reported to shoal rapidly between dredgings. In 2009, the controlling depth was 8.2 feet. (For information on the latest reported shoaling, consult the Coast Guard Local Notice to Mariners.) The channel is marked by lights, buoys, and daybeacons. In 2011, a side channel to the Coast Guard pier and the ferry landing had a controlling depth of 4 feet and is marked by two lights.

(70) Rollinson Channel, the approach to Hatteras from Pamlico Sound, is discussed later in this chapter.

(71) A small ferry carries vehicles and passengers across Hatteras Inlet from Austin Creek to Ocracoke Island.

### Currents

(72) The tidal currents in the channel through the inlet are influenced by winds and attain velocities of about 2 knots. (For predicted times and velocities see the Tidal Current Tables.)

(73) Other channels in Pamlico Sound are described in another part of this chapter.

## Chart 11550

(74) **Ocracoke Inlet**, 27 miles west-southwest of Cape Hatteras Light (chart 11555), is entered over a shifting bar between the southern end of Ocracoke Island and the northern end of Portsmouth Island; the bar is subject to frequent changes. A lighted whistle buoy marks the approach. Other buoys marking the inlet are not charted, because they are frequently shifted in position; local knowledge is advised. **Ocracoke Inlet Crab Spawning Sanctuary**, a Marine Protected Area (MPA), is in the inlet near Ocracoke Island and Pamlico Sound.

(75) **Ocracoke Light** (35°06'32"N., 75°59'10"W.), 75 feet above the water, is shown from a white tower near a clump of woods on the western part of Ocracoke Island and about 3 miles northeastward of Ocracoke Inlet. **Ocracoke Coast Guard Station** is 0.4 mile north of the light.

(76) A microwave tower about 1 mile east-northeast of Ocracoke Light is reported to be prominent.

(77) Several channels or sloughs lead from Ocracoke Inlet through the shoals to deep water in Pamlico Sound. Teaches Hole Channel follows the western side of Ocracoke Island and connects with Silver Lake through a dredged channel at Ocracoke. It also joins **Big Foot Slough Channel** northwest of Ocracoke which leads to Pamlico Sound. In 2011, the midchannel controlling depth in the entrance channel to Silver Lake was 6 feet. Teaches Hole Channel is subject to frequent changes; buoys are frequently shifted in position. In 2011, the controlling depth in Big Foot Slough Channel was 4.2 feet. The channel is reported to shoal considerably between dredgings. Strong currents have been experienced in these channels. Mariners are advised to exercise caution while navigating in the area.

(78) A swash channel, marked by a light and daybeacons, connects Big Foot Slough Channel with **Nine Foot Shoal Channel**. which leads off in a northwesterly direction. The controlling depth is about 5 feet through the swash channel to Pamlico Sound. Some local vessels use this channel as a short cut, but Big Foot Slough Channel is the recommended channel.

(79) There are other unmarked shallow channels leading from Ocracoke Inlet to Pamlico Sound, but they should not be used without local knowledge because of the shifting shoals.

(80) The town of **Ocracoke**, 3.5 miles inside the inlet, is frequented by numerous fishing vessels. Supplies in limited quantities are available. Gasoline, diesel fuel, water, and ice may be obtained at the piers.

(81) A toll ferry transports passengers and autos daily from Ocracoke to a ferry landing on the north side of Cedar Island, about 12 miles by road north of Atlantic on the mainland and also to a ferry landing at Swanquarter, about 25 miles north-northwest of Ocracoke. There are several motels and restaurants in the village. There are numerous points of interest on the island, and the National Park Service has a museum at the village and also maintains camp sites for tourists. Facilities for repairing boats are limited.

(82) **Silver Lake**, a circular basin at Ocracoke, affords good anchorage in depths of 12 feet, and has several wharves extending from the shore to depths of 10 or more feet. Vessels are requested to anchor only in the southern end of the lake so as not to interfere with ferry traffic. Diesel fuel, gasoline, marine supplies, a pumpout station, water, ice, berthing with electricity and a launching ramp are available nearby. The National Park Service piers on the north side of the basin have berths with electricity and water.

(83) **Portsmouth** is a small abandoned town overseen by the National Park Service on the west shore of Ocracoke Inlet. A spire and a cupola here are prominent landmarks. The inactive Coast Guard Station, the largest building, is near the inlet.

### Currents

(84) The currents in the inlet and connecting channels are influenced by the winds. The ebb current usually has a greater velocity than the flood. Velocities up to 4 knots have been observed.

(85) **New Drum Inlet** (see chart 11545), 19 miles southwestward of Ocracoke Inlet, is an opening in the barrier beach leading to deep water in Core Sound. The channel is not maintained by dredging and is constantly shifting. In 1983, the inlet was reported to be dangerous and not recommended for use by anyone.

## Chart 11544

(86) **Cape Lookout** is the extremity of a long and very narrow sand beach projecting into the sea where the coast angles sharply westward. **Cape Lookout Light** (34°37'22"N., 76°31'28"W.), 156 feet above the water, is shown from a black and white diagonally checkered tower on the north point of the cape. **Cape Lookout National Seashore**, a Marine Protected Area (MPA), is located between Ocracoke Inlet and Beaufort Inlet.

(87) **Cape Lookout Shoals** extend about 9 miles south-southeastward from the cape where they are marked by a lighted buoy. Their greatest width is about 2 miles, and depths over the shoals range from 2 to 18 feet. **Lookout Breakers** is the local name for the ridge, covered 2 feet, about 4 miles out on the shoals south of the cape. Between Lookout Breakers and the cape are several other spots which break heavily.

(88) Outside the shoals proper is an irregular shoal with a depth of 29 feet over it in about 34°25'26"N., 76°23'41"W.; thence about 3 miles south-southeastward there is a wreck cleared to 39 feet. These can be avoided by passing south of the lighted bell buoy about 18 miles south-southeastward of the cape. In thick weather a vessel should stay in 14 fathoms or more if uncertain of its position. A number of wrecks and fish havens with varying depths over them are in the vicinity of the shoals; some are marked.

## Chart 11545

(89) **Lookout Bight**, on the west side of Cape Lookout, affords good anchorage for large vessels, except with winds from south through west to northwest. **Power Squadron Spit**, the west side of Lookout Bight, is subject to continual change and is partially protected by a rubblestone breakwater awash at low water and hardly visible when a heavy sea is running; its outer end is marked by a lighted buoy about 300 yards northwestward of its seaward end. Mariners should give it a wide berth in bad weather.

(90) Large oceangoing vessels usually anchor north or northwest of the breakwater in 39 to 45 feet, soft sand and mud bottom.

(91) Good anchorage for small vessels can be had in the inner bight northeast of **Catfish Point** in 7 to 14 feet, good holding ground of soft mud. Prevailing swell from the southwest is effectively excluded, but the surrounding terrain is too low to greatly restrain the force of wind. A severe blow from the northerly direction may cause a vessel to drag, but most boats drop an extra anchor if the wind reaches gale force from any direction.

(92) A channel extends from deep water in Lookout Bight through **Barden Inlet** and **Lighthouse Bay** to deep water in Back Sound. The channel is very unstable and has a tendency to fill; strangers should use extreme caution. The channel is well marked; however, the uncharted buoys and daybeacons through Barden Inlet are frequently shifted in position to mark the best water. Local knowledge is advised. **Barden Inlet Crab Spawning Sanctuary**, a Marine Protected Area (MPA), is in the inlet near Schackleford Banks and Beaufort Inlet.

(93) The channels in Back Sound and Core Sound are described in another section.

### INLAND WATERS

### COLREGS Demarcation Lines

(94) The lines established for the inlets, rivers, and bays of this part of the coast are described in **80.515 through 80.525**, chapter 2.

## Charts 12207, 12204, 12205

(95) **Currituck Sound** is a narrow and shoal body of water which extends for 25 miles in a north-south direction behind the barrier beach near Currituck Beach Light. The southern part of the sound is navigable for craft drawing 4 or 5 feet to the junction with Albemarle Sound, but navigation among the extensive shoals depends on local knowledge of the channels and on the level of the water. The northern part of the sound is practically unnavigable due to dense grass. There are no periodic tides in Currituck Sound; the water level depends upon the force and direction of the winds.

(96) There are several small-craft facilities on **Knotts Island** at the northern end of Currituck Sound. Berths, electricity, water, ice, and launching ramps are available.

## Charts 12207, 12205

(97) **Back Bay** and its connections with Currituck Sound extends a little over 10 miles northward from the northeastern end of the sound. This shoal bay is navigable only for small boats. Northward of Back Bay are shallow **Shipps Bay** and **North Bay**. Facilities with small-boat launching ramps, and some with gasoline, water, ice, and bait and tackle, are along the western shore of Back Bay. **Mackay Island National Wildlife**

**Refuge**, a Marine Protected Area (MPA), is located from Back Bay to Currituck Sound.

(98) **North Landing River** extends in a north-northwesterly direction from the north end of Currituck Sound. The river is a part of the Intracoastal Waterway and is described in chapter 12.

(99) Naval aircraft bombardment **target areas** are in North Landing River off Troublesome Point, and in Currituck Sound east of Bell Point. (See **334.410**, chapter 2, for limits and regulations.)

## Charts 12204, 12205

(100) Several landings are on the east shore of **Whale Head Bay**, just southward of **Currituck Beach Light** (36°22'37"N., 75°49'47"W.).

(101) A cable area, marked by private daybeacons, crosses Currituck Sound from Corolla to Aydlett.

(102) The landing at **Poplar Branch**, on the western shore of Currituck Sound, about 6 miles south-southwestward of Currituck Beach Light, is frequented by local fishermen and duck hunters. In 1983, depths of 3 feet were reported in the approach to the pier and 7 feet alongside. In 1983, a midchannel controlling depth of 2 feet was reported in the channel to **Gaffy Landing**, about 2 miles south of Poplar Branch.

(103) **Piper Hill**, on the outer beach, about 4 miles east of Poplar Branch, is approached through **Lone Oak Channel** and **Beasley Bay**. Lights mark the channel. In July 1983, the reported midchannel controlling depth was 2 feet. Dense grass covers the whole area.

(104) **Wright Memorial** (U.S. Route 158) Highway Bridge over the south end of Currituck Sound between **Sampson Point** and the outer beach, has a 40-foot fixed span over the navigation channel with a clearance of 35 feet.

## Charts 12205, 12206, 11553, 12204

(105) **Albemarle Sound** is about 45 miles long in an east-west direction, and in width ranges from 11 miles near its eastern end to 3 miles about 10 miles from the western end. The sound has good navigable depths for any vessel able to pass through the canals and, with its numerous tributaries, forms the approach to many towns and landings. **Albemarle Sound Herring Management Area**, a Marine Protected Area (MPA), includes Albemarle, Currituck, Roanoke and Croatan Sounds.

(106) There are depths of 10 to 18 feet along the routes from North River and Pasquotank River to Croatan Sound and Alligator River, and less water farther eastward. Fish stakes and nets, extending long distances from shore are often found on the shoals, especially at the northern entrance to Croatan Sound. The shores of Albemarle Sound are low and generally wooded; there are no prominent natural features.

(107) A naval aircraft bombardment **target area** is on the south side of Albemarle Sound westward of the entrance to Alligator River. (See **334.410**, chapter 2, for limits and regulations.)

(108) The eastern end of Albemarle Sound, which is separated from the Atlantic Ocean by the barrier beach about 15 miles north of Bodie Island Light, is connected northward with Currituck Sound and southward with Croatan and Roanoke Sounds, and by the latter sounds with Pamlico Sound.

(109) Westward of Laurel Point, about 33 miles from the east end of Albemarle Sound, the water is usually fresh or slightly brackish. The rise and fall of the water level depends on the direction of the winds.

## Charts 12204, 12205

(110) **Kitty Hawk Bay**, with depths of about 3 to 8 feet, is at the east end of Albemarle Sound. Daybeacons mark the best water into the bay. **Kitty Hawk** is a small town on the north side of the bay. There are several private landings along its shores. A public marina is at **Avalon Beach** at the southeastern end of the bay; berths, electricity, water, ice, and a launching ramp are available during the summer.

(111) **North River**, on the north side of Albemarle Sound near the eastern end, is a part of the Intracoastal Waterway and is described in chapter 12.

## Chart 12206

(112) **Pasquotank River Entrance Light PR** (36°09'23"N., 75°58'38"W.), 23 feet above the water, shown from a multi-pile structure with a black and white diamond-shaped daymark, marks entrance to **Pasquotank River**. A light is about 2.2 miles westward of the entrance light. The river, entered between **Wade Point** on the west and Camden Point on the east, and Elizabeth City are described in connection with the Dismal Swamp Route of the Intracoastal Waterway, chapter 12.

## Chart 12205

(113) **Flatty Creek**, about 7.5 miles westward of Pasquotank River Entrance Light PR (36°09'23"N., 75°58'38"W.), is shoal and little used. In 1983, depths were reported to be 2 feet over the bar, thence 3 feet for a distance of 3.5 miles.

(114) **Little River** is on the north side of Albemarle Sound and 4 miles westward of Flatty Creek. The channel at the entrance is about 0.3 mile wide between shoals, and is marked by a daybeacon. The river has a general northwesterly trend to the village of **Nixonton**, which is on the east bank 7 miles above the entrance. There are no facilities at the village. In 1983, depths of 5 feet were reported to the village. Spits, with little water over them and generally steep-to, make out some distance in places from the shores, especially off the points. The channel in the upper reaches of the river is well marked

by the outer ends of the fishweir stakes which make out from shore. A launching ramp and limited supplies are available to sport fishermen in **Hall Creek**, about 1.5 miles above Nixonton.

(115) **Perquimans River**, on the north side of Albemarle Sound, about 4 miles westward of Little River, has its entrance between **Harvey Point** on the west and **Reed Point** on the east. A light is about 1.2 miles southward of Reed Point, and a light is close eastward of Harvey Point. Numerous submerged piles are south and southeastward of Harvey Point. A depth of about 8.8 feet can be carried to Hertford, about 11.5 miles above the entrance, thence about 7 feet for about 1 mile to the railroad bridge.

(116) Two other bridges cross Perquimans River. U.S. Route 17 bypass highway bridge, between **Ferry Point** and **Crow Point**, about 10.5 miles above the entrance, has a fixed span with a clearance of 33 feet, and U.S. Route 17 highway swing bridge, about 0.6 mile above and crossing the narrow part of the river at Hertford, has a clearance of 7 feet. (See **117.1 through 117.59 and 117.835**, chapter 2, for drawbridge regulations.)

(117) Obstructions have been reported near midriver about 0.5 mile and 1 mile below the highway fixed bridge.

(118) **Hertford**, on the southwest bank of Perquimans River, has rail connections with the Class I Railway and highway connections with U.S. Route 17 to Edenton and Elizabeth City. Oil is barged into Hertford to an oil pier on the south side of the river just above the highway swing bridge. The river water is fresh at Hertford.

(119) Above Hertford the river is narrow and crooked, but has fairly good depths for about 8 miles to a point near **Goodwin Creek**. Navigation is restricted to very small boats, about a mile above the highway swing bridge, by the railroad bridge, which has a 22-foot fixed span with a clearance of 3 feet.

(120) **Yeopim River**, 6 miles west of Perquimans River, is shoal and unimportant. A shoal area, marked at its southeastern extremity by a daybeacon, extends from the entrance. Stumps and other obstructions are near the center of the shoal. This area should be avoided. In crossing the shoal, mariners should leave the daybeacon to the eastward and slightly favor **Drummond Point**, the southern entrance point of Yeopim River. Local knowledge is advised.

(121) Six miles southwestward from Drummond Point, State Routes 32-37 highway bridge crosses Albemarle Sound from **Sandy Point** to the south shore. The fixed span has a clearance of 65 feet. About 4 miles W of the highway bridge, an overhead power cable crosses the sound. The cable clearance is 94 feet over the main channel and 54 feet elsewhere.

(122) **Edenton Bay** is on the north side of Albemarle Sound just westward of the ruins of the railroad trestle which crosses the sound. **Edenton**, a town at the head of the small bay, has rail and highway communications with Norfolk and the south. Lumber is shipped by rail, truck, and by barge. The main industries are peanuts, lumber, veneer, inks, textiles, plywood, and boatbuilding. The river water is fresh.

(123) Two large water tanks in the town are the most prominent objects from the sound. Also prominent is a radio tower near the city wharf.

(124) A dredged channel leads from deep water in Albemarle Sound to the head of the bay where it separates into dredged reaches leading in northwesterly and northeasterly directions along the town waterfront. In 1977, the midchannel controlling depths were 7½ feet in the entrance channel, thence 7½ feet in the eastern portion of the northwestern reach, and 5½ feet in the remainder of the northwestern reach and in the northeasterly reach. The channel is well marked by lights and daybeacons.

(125) The inner anchorage, close eastward of the channel entrance, has a depth of 9 feet, but is small. The larger anchorage is on the western side of the entrance. Numerous fish stakes, some of which are covered at low water, are reported inside the 12-foot contour on the west side of the entrance to Edenton Bay from Reedy Point eastward.

(126) The city wharf, which has a light, is at the head of the entrance channel. In 1983, depths of 10 feet were reported alongside the west bulkhead. A fish wharf and an oil wharf are close westward of the city wharf; depths of 10 feet were reported alongside in 1983.

(127) **Pembroke Creek** is a small nontidal stream flowing easterly into the head of Edenton Bay. U.S. Route 17 highway bridge, 0.6 mile above the mouth of the creek, has a 20-foot fixed span with a clearance of 5 feet. With local knowledge a draft of 5 feet can be carried to the bridge. In 1978, a submerged obstruction was reported in the channel near the mouth of the creek in about 36°03'25"N., 76°37'04"W.

(128) **Chowan River** empties into the western end of Albemarle Sound from northward, and with its tributaries forms one of the largest rivers in North Carolina. In 1977, the controlling depth was 12 feet to Winton, about 32 miles above the mouth, and to the confluence of Blackwater and Nottoway Rivers, 45 miles above the mouth. For about 17 miles above its mouth, Chowan River has an average width of 1.5 miles. Snags, many of which are underwater, are generally found on the shoals in this part of the river; the worst place, known as **Stumpy Reach**, is between Colerain Landing and **Bennetts Creek**, a distance of about 6 miles. The channel must be followed closely passing through this reach.

(129) Chowan River is marked by lights and daybeacons to a point about a mile below Winton.

(130) Traffic on the river is mainly in pulpwood barges, and there is some commercial fishing. Gasoline, limited supplies, and launching ramps are available for small craft at various marinas along the river as far as Winton.

(131) **Salmon Creek** is a small stream which flows easterly into the west side of Chowan River just above the mouth. The entrance to the creek is a good harbor for

boats of drafts up to 6 feet. **Avoca** is a village on the south bank about a mile above the entrance. In 1963, the controlling depth was 7 feet to Avoca, thence 5 feet for another 0.5 mile.

(132) The U.S. Route 17 highway bridge, between Emperor Landing and Edenhouse Point, about 2 miles above the mouth of Chowan River, has a fixed span with a clearance of 65 feet.

(133) Gasoline, berthing, limited supplies, and a launching ramp are available at a marina in **Rockyhock Creek** on the east bank of the river about 6 miles above the mouth. Depths in the approaches and alongside were reported to be 4 feet in 1983.

(134) **Colerain Landing**, on the west bank of the Chowan River, 12 miles above the entrance, is the site of a large herring factory. Just above it is an oil dock. The village of **Colerain** is on a hill 0.5 mile inland.

(135) Limited supplies, gasoline, and a launching ramp are available at a marina on the south bank of the river about 20 miles above the mouth.

(136) **Tunis** is a landing on the south bank of Chowan River 30 miles above the mouth. An overhead power cable at Tunis has a clearance of 74 feet. Gasoline, limited supplies, and a launching ramp are available at a marina on the west side of **Catherine Creek** just above the overhead power cable.

(137) **Winton** is a small town on the west bank of the river 32 miles above the mouth. U.S. Route 13 highway bridge at Winton has a fixed span with a clearance of 35 feet. A small wharf is below the bridge on the south bank and eastward of a ramp used by barges for loading pulpwood.

(138) **Meherrin River** joins the Chowan River from westward 2.5 miles above Winton. A **cable ferry** crosses Meherrin River about 0.4 mile above the mouth. The ferry, operated during daylight hours only, carries passengers and vehicles. The ferry is guided by a cable that passes over pulleys 3 feet above the water at each end of the ferry and then runs below the water surface about 15 feet from each end of the ferry. The cable is dropped to the bottom when the ferry is not underway. Warning signs are posted 1 mile from each side of the crossing. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(139) **Murfreesboro** is a small town 10.5 miles above the mouth. U.S. Route 258 highway bridge here has a fixed span with a clearance of 24 feet. In 1965, the controlling depth was 10 feet to Murfreesboro; the turning basin here had a controlling depth of about 12 feet.

(140) About 13 miles above Winton, Chowan River is formed by the confluence of **Blackwater River** and **Nottoway River** near the Virginia State line. In 1983-2003, the controlling depth in **Blackwater River** was reported to be 8.3 feet to **Franklin**, VA. There are reports of numerous snags in the river. Small craft are able to reach **Burdette**, VA, 10.5 miles above Franklin. A highway bridge across Blackwater River, 8 miles above its mouth at South Quay, has a swing span with a clearance of 15 feet. (See **117.1 through 117.59 and 117.999**, chapter 2, for drawbridge regulations.) Five other bridges cross the river between Franklin and Burdette; the fixed bridges have a minimum channel width of 22 feet and a minimum clearance of 12 feet. Navigation of Nottoway River is restricted by seven fixed bridges; the minimum channel width of the bridges is 13 feet and the clearance 7 feet.

(141) **Roanoke River** rises in the Blue Ridge Mountains, west of Roanoke, VA, and flows southeasterly into **Batchelor Bay**, a shoal bight at the southwestern end of Albemarle Sound; about halfway it is joined by the **Dan River**, its principal tributary. There are a number of flood control and power dams on the rivers. The largest of these, about 17 miles below Clarksville, VA, forms the John H. Kerr Reservoir. The reservoir extends upstream about 48 miles on the Roanoke and about 30 miles on the Dan River. Another dam is at **Roanoke Rapids** about 120 miles from the mouth of the river.

(142) In 1977, the midchannel controlling depth was 10 feet at midchannel from Albemarle Sound to Plymouth, thence 2½ feet to Hamilton, 52 miles above the mouth, with shoaling to bare between Hamilton and Palmyra Landing, 67 miles above the mouth. The river is marked by lights and daybeacons to a mile below Plymouth. In 1982, a foul area was reported between Daybeacon 12 and Light 13. Traffic on the river is mainly in petroleum products, and some plywood products hauled by barges.

(143) A fixed highway bridge, which spans the Roanoke, Middle, and Cashie Rivers, crosses the Roanoke 2.5 miles above the mouth with a clearance of 50 feet.

(144) **Plymouth** is an important town 6 miles above the mouth of Roanoke River. The town has good highway and rail connections. Water, gasoline, diesel fuel, marine supplies, and a launching ramp are available. There are several small wharves at Plymouth with 12 feet reported alongside. A veneer factory is on the river front below the town, and 1 mile above the town is the large wharf of a pulpmill, which has 15 to 18 feet of water alongside.

(145) **Williamston** is 26 miles above the mouth of the river. U.S. Routes 13 and 17 highway bridge at Williamston has a fixed span with a clearance of 45 feet. Just below the bridge are a fertilizer plant and an oil dock. Several oil piers are above the bridge. Logs and oil comprise most of the shipping.

(146) About 9 miles above Hamilton, a fixed bridge with a clearance of 14 feet crosses the river.

(147) **Cashie River** flows southeasterly for about 50 miles to its intersection with the **Thorofare,** connecting Cashie and Roanoke Rivers; thence it flows northeasterly for about 6 miles and empties into Batchelor Bay. In 1977, the midchannel controlling depth was 9 feet to Windsor. Mariners are advised, however, that shoaling and many obstructions have been reported in Cashie River. A fixed highway bridge, which spans the Cashie, Middle, and Roanoke Rivers, crosses the Cashie River about 1 mile above Batchelor Bay and has a clearance of 16 feet.

(148) A **cable ferry** crosses Cashie River about 6 miles above the mouth. The ferry, operated during daylight hours only, carries passengers and vehicles. The ferry is guided by a cable that passes over pulleys 3 feet above the water at each end of the ferry and then runs below the water surface about 15 feet from each end of the ferry. The cable is dropped to the bottom when the ferry is not underway. Warning signs are posted 1 mile from each side of the crossing. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(149) The Thorofare has several sharp bends, and at its junction with the Cashie River there are two small islands. Pass eastward of the islands. The head of navigation in Cashie River is the fixed highway bridge at **Windsor**. Gasoline is available. An overhead power cable crossing the river about 0.5 mile below the bridge has a clearance of 55 feet.

(150) **Kendrick Creek** is on the south side of Albemarle Sound just westward of the overhead power cable which crosses the sound. Several fisheries with gasoline and marine supplies, and a launching ramp are on the creek. In 2007, the reported controlling depth at the entrance to the creek was 6 feet; thence in 1977, 5½ feet at midchannel to Mackeys, about 0.5 mile above the entrance, thence, in 1963, 7 feet for a distance of 4 miles up the creek, which is the head of navigation; the creek is obstructed by trees and logs above this point. The entrance is marked by a light and daybeacon.

(151) The channel into Kendrick Creek is marked on either side by rows of piles. There are stumps in places on the shoals at the mouth of the creek. An overhead power cable just above the mouth has a clearance of 49 feet. **Mackeys** is a small town 0.5 mile above the entrance. The highway bridge about 0.5 mile above Mackeys has a 34-foot fixed span with a clearance of 8 feet. An overhead power cable just south of the bridge has a reported clearance of 9 feet.

(152) **Bull Bay** is on the south side of Albemarle Sound, about 13 miles eastward of Kendrick Creek. **Bunton Creek (Bull Creek)** and **Deep Creek** empty into the western side of the bay. A channel, with a reported depth of 5 feet in 1983, leads through the flats to the entrance of Bunton and Deep Creeks.

(153) **Scuppernong River** empties into the eastern end of Bull Bay from southeastward. Lights and daybeacons mark the channel from the bay to Columbia. In 2000, the midchannel controlling depths were 5.3 feet in the bar channel, thence 7 feet to Columbia; thence in 1977-2000, 3 feet to Spruills Bridge, thence 2½ feet to a turning basin at **Cherry**, about 16 miles above the mouth. A marina on the south side of the river, 3 miles above the mouth, has berths with electricity, gasoline, diesel fuel, pump-out station, water, ice, some marine supplies, wet and dry storage, and a launching ramp. A 25-ton mobile lift is available; hull and engine repairs can be made. In 2010, the reported alongside depth was 2.5 feet.

(154) **Columbia**, a small town 4 miles above the mouth of the river, has two inactive oil docks and several landings. The landings have depths of 14 to 16 feet alongside, but are in poor condition and not able to accommodate more than one boat at a time. A marina, on the east side of the river close above the first highway swing bridge, has gasoline, diesel fuel, some supplies, and a launching ramp.

(155) The U.S. Route 64 highway bridge, about 4.3 miles above the entrance, has a 35-foot fixed span with a clearance of 12 feet; the navigation span of this bridge is removable.

(156) **Cross Landing Bridge**, 12 miles above the mouth of Scuppernong River, has a fixed span with a channel width of 32 feet and a clearance of 5 feet. **Spruills Bridge**, 15 miles above the mouth near **Creswell**, has a 32-foot removable span with a clearance of 6 feet. An overhead power cable at the bridge has a clearance of 25 feet.

## Charts 12205, 11553

(157) **Alligator River** is on the south side of Albemarle Sound directly opposite Pasquotank River. For about 18 miles above the mouth (see also chart 11548), Alligator River has a southerly direction, is 2 to 3 miles wide, and has general depths of 8 to 11 feet. Above this, the river has a further length of about 24 miles, is narrow and crooked, but, in 1983, had a reported centerline controlling depth of 8 feet to **Cherry Ridge Landing**; the upper part, however, is too narrow to turn in.

(158) Good anchorages in depths of about 6 to 8 feet are reported in **Milltail Creek**, **Whipping Creek**, and **Swan Creek**, which make into the east side of Alligator River about 10 miles, 19 miles, and 20 miles above its mouth, respectively. Mariners should take care to avoid stumps along the banks of these creeks.

(159) The entrance to Alligator River is full of shoals, but the channel of the Intracoastal Waterway, described in chapter 12, has been dredged through the shoals and along the entire length of the wider part of the river. Numerous fish stakes are reported to exist on the east side of the river extending about 0.5 mile offshore.

(160) On the eastern side of Alligator River and just above the mouth is the entrance to **East Lake** and **South Lake** (see also chart 12204), which in July 1983, had reported depths of 6 feet. The village of **East Lake** is on the east side of Alligator River, 4 miles above the mouth. U.S. Route 64 highway bridge crossing the river at East Lake has a swing span with a clearance of 14 feet. VHF-FM channel 16 and 13 are monitored at the bridge. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.)

(161) **Little Alligator** River empties into Alligator River from westward just inside the entrance. The narrow, crooked channel of Little Alligator River, in 1983, had a reported controlling depth of 4 feet to the head of the river, 6 miles above the mouth. The river is reported to be a good anchorage for boats drawing 3 feet or less.

## Charts 12204, 12205

(162) **Croatan Sound**, between Roanoke Island and the mainland, connects Albemarle and Pamlico Sounds. In 2002-2004, the controlling depth through the dredged channel was 6.8 feet. The channel is well marked, but strangers should not attempt passage at night. Fish stakes are numerous in season.

(163) Height of water in Croatan Sound depends entirely on the wind, which under exceptional conditions may lower or raise the level as much as 1.5 feet from normal; easterly winds lower the water and westerly winds raise it. Strong northerly or southerly winds produce currents which are especially marked when the wind shifts suddenly to the opposite direction.

(164) There is a good harbor in **Peter Mashoes Creek**, westward of Croatan Sound Light 3CS, but entrance is possible only for small craft. The fixed highway bridge (U.S. Routes 64 and 264) between **Redstone Point** on the mainland and **Weir Point** on Roanoke Island has a clearance of 44 feet.

(165) A fixed highway bridge across Croatan Sound about 2.75 miles southward of the U.S. Routes 64/264 fixed highway bridge has a clearance 66 feet.

(166) Roanoke Sound and the towns on the east side of Roanoke Island are described in another section.

## Charts 12204, 11548, 11555

(167) **Pamlico Sound**, the largest body of water in North Carolina, extends from Roanoke Island to Cedar Island. On the east it is separated from the Atlantic Ocean by a narrow barrier beach extending from Oregon Inlet to the southern end of Portsmouth Island. To the west it is joined by the Pamlico and Neuse Rivers, and to the south by Core Sound. It is about 65 miles long and has a maximum width of about 25 miles. Oregon, Hatteras, and Ocracoke Inlets pierce the narrow beach, giving access to the ocean, but all are blocked by inside bars with little water over them; they are described in another section. **Cape Hatteras National Seashore** and **Swanquarter National Wildlife Refuge** are Marine Protected Areas (MPA) along Pamlico Sound.

### Caution

(168) Numerous fishtraps, stakes, and pound nets have been reported in Pamlico Sound; some may be submerged. Small craft should use caution when operating outside the main channel. Pamlico Sound Light PS (35°25'29"N., 75°50'01"W.), 35 feet above the water, shown from a skeleton tower on a multi-pile structure with a red and white octagonal-shaped daymark, marks a dangerous wreck, reported covered 12 feet.

(169) The northern and western shores of Pamlico Sound are broken by numerous small bays and two large rivers, Pamlico River and Neuse River. General depths in the middle of the sound are 14 to 24 feet, but shoals extend miles from shore in many places. **Bluff Shoal**, northward of Ocracoke Inlet, has 7 to 12 feet over it and extends completely across the sound. It is marked by a light. A dangerous wreck, reported covered 4 feet, is close northward of the light.

(170) In the exposed parts of the sound, strong winds from any direction raise a short, choppy sea uncomfortable to small craft and even dangerous to open boats; but protected anchorage for small craft can be found in the many bays along the northern shore, and along the southern shore in several sloughs which lead to sheltered berths in the lee of shoals. Middletown Anchorage and the anchorage in the bight formed by the hook of Royal Shoal can be made either day or night, with caution.

### Currents

(171) Currents are negligible except in the vicinity of the inlets.

## Chart 12204

(172) **Stumpy Point Bay**, on the west side of Pamlico Sound 10 miles from the south end of Roanoke Island and about 11 miles southwestward of Oregon Inlet, affords good anchorage in depths of about 3 to 4 feet. A dredged channel leads from Pamlico Sound to a turning basin at **Lake Worth**, the small town at the head of the bay. In 2011, the controlling depth was 4 feet to the basin and in the basin. The channel is well marked by lights and daybeacons. Two fishhouses at the upper end of the basin have diesel fuel, gasoline, water, ice, and marine supplies.

(173) **Long Shoal River**, which flows southerly into Pamlico Sound about 8 miles southwestward of Stumpy Point Bay, is 1.5 miles wide at the mouth and is a good anchorage for vessels with drafts of 8 feet or less. Shoals with 1 to 2 feet over them on both sides of the entrance break up the sea from southward. In 1983, the channel had a reported controlling depth of 7 feet to the anchorage off **Pains Bay**, thence 7 feet for another mile, thence 4 feet for 2 miles. **Long Shoal,** to the east of the entrance, and **Pingleton Shoal**, on the west, are marked by lights, and daybeacons mark the points of shoals in the entrance. In 1984, shoaling to 5 feet was reported about 150 yards northward of Pingleton Shoal Light 1PS. In 1985, shoaling to 6 feet was reported extending southeast from Long Shoal Light 2LS. With the aid of the chart, strangers should have little difficulty entering Long Shoal River in daytime. The **danger zone** of a naval ordnance test area is centered at targets on Long Shoal. (See **334.410**, chapter 2, for limits and regulations.)

(174) **Rodanthe** is a town on the narrow barrier beach on the east side of Pamlico Sound 12 miles southward of Oregon Inlet and nearly opposite Stumpy Point Bay. **Chicamacomico Channel** is a dredged channel leading from the sound to the basin at Rodanthe. Two landings

are in the basin in addition to the bulkhead area. In 2011, there was a controlling depth of 3 feet in the channel; thence in 2009-2011, 3 feet in the basin. The channel approach and channel are marked by lights and daybeacons.

## Chart 11555

(175) **Avon** is a town on the barrier beach on the southeast side of Pamlico Sound 5.7 miles northward of Cape Hatteras Light (35°15'02"N., 75°31'44"W.). Shoal water extends about 3 miles from shore. A dredged channel leads from Pamlico Sound to the basin at Avon. In 2011, the controlling depth was 1 foot to the basin, thence 2 feet in the basin. The channel is marked by lights. Gasoline and diesel fuel are available at a fishhouse landing in the basin.

(176) **Cape Channel (Buxton Harbor Channel)**, a natural opening in the shoal about 5 miles southwestward of Avon, was formerly part of a channel leading to Avon. It is now used by local fishermen passing from Pamlico Sound to anchorage north of Buxton. Local knowledge is advised. The channel is partially marked by lights and daybeacons.

(177) **Buxton** is a small town about a mile north-northwest of Cape Hatteras Light. The town of **Frisco** is about 4 miles westward, on the southeast side of Pamlico Sound. There are no wharves at either place, and anything but light-draft vessels must anchor well offshore. Local fishermen usually approach Buxton through Cape Channel.

(178) **Rollinson Channel**, about 12 miles southwestward of Avon, is a dredged channel leading from deep water in Pamlico Sound to the basin at Hatteras; it also joins with Hatteras Inlet Channel which leads to Hatteras Inlet. In 2011, the controlling depth was 6.5 feet in the channel; thence in 2009, 7.7 feet in the basin; shoaling to 1 foot was reported in the northeast part of the basin in 1984. The channel is well marked by lights. The lights were reported to be difficult to distinguish from the background lights on shore; caution is advised, and strangers should not attempt passage at night. A light, off the end of **Oliver Reef**, is about 1.5 miles southwestward of the Pamlico Sound entrance to Rollinson Channel.

(179) Hatteras Inlet, Hatteras Inlet Channel, and the facilities at Hatteras were described previously in another section.

(180) **Far Creek** (35°30.5'N., 75°58.0'W.) is on the northwest side of Pamlico Sound between Pingleton Shoal and **Gibbs Shoal**. A dredged channel leads from deep water in the sound to the basin at the town of **Engelhard**. In 2010, the midchannel controlling depth was 7 feet to the basin and in the basin. The channel is marked by lights and daybeacons.

(181) An oil dock and several piers, with depths of 7 to 12 feet alongside, are on the south side of the basin just below U.S. Route 264 fixed highway bridge at Engelhard. There is barge traffic in oil, grain, and sand and gravel. Fishing vessels unload here, and seafood is shipped from the town by truck. Gasoline, diesel fuel, ice, and some marine supplies are available.

(182) **Middletown Anchorage**, a broad open bight in the northwestern shore of Pamlico Sound just southward of Far Creek, has depths of 9 to 13 feet and is sheltered from eastward by Gibbs Shoal, which has 1 to 4 feet over it. There is no shelter from southeasterly or southerly winds. The anchorage is large and easy of access, and is used by tows and other vessels. **Middletown**, a short distance inland from the anchorage, is reached by light-draft boats by way of **Middletown Creek** (see chart 11548). In 1983, the reported controlling depth over the bar and to the fixed bridge over the creek at Middletown was 3 feet. Vessels must pass south of the light on the southeast end of Gibbs Shoal in entering. Gasoline is obtainable in the town.

### Caution

(183) Caution should be used in approaching Middletown Anchorage at night, as the low marshy shore extends long distances from the woods in places and does not show well. In rough weather vessels with drafts less than 4 feet prefer to pass inside Gull Shoal Light GS when bound southwestward from Middletown Anchorage. They enter Wysocking Bay, pass westward of Gull Rocks, and thence eastward of the light 0.4 mile eastward of **Hog Island**.

(184) **Wysocking Bay**, about 7.5 miles southwestward of Far Creek, indents the north shore of Pamlico Sound northwestward of Gull Shoal Light GS. It is a convenient anchorage for small craft drawing less than 5 feet when following the north shore of the sound. In 1983, the bay had reported depths of 5 feet from the entrance to its head. The entrance is obstructed by shoals. Daybeacons and lights mark the channel which leads northward of **Gull Shoal** and into the bay. **Gull Rocks**, on the south side of the entrance to the bay, are covered at ordinary water levels.

(185) **Nebraska Canal** (see chart 11548) leads from the head of Wysocking Bay to a fixed bridge south of **Nebraska**, 2 miles inland. The privately maintained canal is marked by a light at its entrance, and in 1983, had a reported depth of 1 foot. Local knowledge is advised in the canal.

## Chart 11548

(186) **Bluff Point Shoal Light** (35°19'19"N., 76°07'13"W.), 15 feet above the water, shown from a multi-pile structure with a white and black diamond shaped daymark, marks the end of the shoal making eastward about 1.8 miles from **Bluff Point**. The point, low and marshy, separates **East Bluff Bay** and **West Bluff Bay**, two unimportant bights southwestward of Wysocking Bay. A daybeacon marks the 4-foot shoal 2 miles south-southeastward

of Bluff Point. Extending southward from Bluff Point is a large area of shoal water, a tongue of which, called **Bluff Shoal**, extends completely across Pamlico Sound. Depths of Bluff Shoal are 7 to 12 feet. A light is near the middle of the shoal. Close northward of this light is a wreck reported covered 4 feet. A 12-foot slough through the shoal is about 1 mile northward of the light.

(187) **Juniper Bay**, on the north side of Pamlico Sound 4 miles westward of Bluff Point, is about 1.5 miles wide at the entrance, but narrows gradually toward its head, to a narrow, crooked stream 3 miles above the entrance. Shoals extend from both shores. A light marks the shoal extending from the east point at the entrance. The bay has considerable traffic in small craft with drafts less than 5 feet; these make the passage to and from Belhaven by way of Swanquarter Narrows, Swanquarter Bay, and **The Haulover** to Deep Bay.

(188) **Great Island**, on the west side of the approach to Juniper Bay, is low and grassy. A light marks the shoal extending southeast from the island. **Swanquarter Narrows**, between Great Island and the mainland to the north, had a reported centerline controlling depth of 5 feet in 1983. A light marks the western entrance to the narrows.

(189) **Swanquarter Bay**, northwestward of Great Island, is about 2 miles wide at the mouth, but narrows gradually toward its head 4 miles above. Oyster beds are numerous in the bay. A water tank, painted orange, near the northwest end of town in about 35°24.5'N., 76°19.9'W., is reported prominent from the bay.

(190) A privately dredged channel leads through Swanquarter Bay to a ferry terminal basin at Swanquarter just north of Long Point. In 1983, the channel had a reported controlling depth of 5 feet. Another dredged channel leads from near the northern end of the bay to a boat basin at Swanquarter. In 2003, the controlling depth in the entrance channel and in the basin was 7.9 feet. The channels through Swanquarter Bay are marked by lights and a daybeacon.

(191) **Swanquarter**, the seat of Hyde County, is the center of trade for much of this area. Gasoline, diesel fuel, water, marine supplies, and a launching ramp are available in the basin. The town has highway connections with U.S. Route 264.

(192) A dredged channel leads through a land cut, known as **The Haulover**, from the west side of Swanquarter Bay, about 3.5 miles above the entrance, and connects with Deep Bay to the westward. In 2001, the reported controlling depth through The Haulover was 13 feet. A light is at each end of the cut. Local vessels use this route.

(193) **Rose Bay**, westward of Swanquarter Bay on the north side of the entrance to Pamlico River, is 1.8 miles wide at the entrance, but shoals extending from both sides restrict the entrance channel to a width of 0.6 mile. A small marina is at the head of the bay. Berths, gasoline, water, limited marine supplies, and two launching ramps are available. A light is at the entrance, and daybeacons and lights mark the best water in the bay. The bay is used mostly by local fishing boats.

(194) **Deep Bay**, leading eastward from just inside the entrance of Rose Bay, is the approach to The Haulover, a dredged land cut to Swanquarter Bay which was described previously. Local vessels use this route. **The Blowout** is a privately maintained channel cut through the narrow neck of **Judith Island** from Deep Bay to Deep Cove on the Pamlico Sound side. The channel is used considerably by local fishermen; strangers should not attempt it. In 1983, the reported controlling depth through The Blowout was 1½ to 2 feet.

## Charts 11548, 11554

(195) **Pamlico River** and **Tar River** are the two names applied to the same river; it is known as the Pamlico below Washington, N.C., and as the Tar above that point. The river rises in Person County, flows in a general southeasterly direction, and empties into the northwestern part of Pamlico Sound. Pamlico River, in 1963, had depths of 12 feet or more for a distance of 20 miles above the mouth to a point just above Core Point.

(196) Above this point a dredged channel leads to Washington, and, in Tar River, a natural channel leads for about 15 miles to the entrance to Hardee Creek, thence for another 3 miles to Greenville. In 1975, the midchannel controlling depth in the dredged channel was 9 feet to a point about 0.4 mile above the second bridge at Washington; thence in Tar River, in 1956-1975, centerline depths of 2½ feet to Hardee Creek, except for shoaling to less than 1 foot at the entrance to Hardee Creek, and thence 2½ feet from Hardee Creek to Greenville. The channel is marked by lights to Washington.

(197) Pamlico River is nontidal; variations in the water level at Washington, due to prevailing winds, seldom exceed 2 feet. The extreme range of the flood or freshet stage for Tar River is 34 feet at Tarboro, 75 miles above the mouth. For the lower section, the extreme range due to winds is 8.5 feet.

## Charts 11548, 11553

(198) **Pungo River** empties into Pamlico River from northward about 5 miles above the mouth. The channel through the lower 15 miles of the river, part of the Intracoastal Waterway, is well marked by lights and daybeacons. Above the Intracoastal Waterway, the river narrows. In 1983, the reported centerline controlling depth in this section of the river was 5 feet to **Leechville**, a town 18 miles above the mouth. The U.S. Route 264 highway bridge at Leechville has a 30-foot fixed span with a clearance of 7 feet. An overhead power cable on the north side of the bridge has a clearance of about 28 feet. Tributaries to the Pungo River include several navigable creeks. The most important in order of ascension are Wright, Slade, Pungo, Pantego, and Wilkerson, which empty into the

northeast end of the river. The route of the Intracoastal Waterway, described in chapter 12, follows Pungo River from Wilkerson Creek to and across Pamlico River.

(199) **Wright Creek** empties into the west side of Pungo River 2 miles above the mouth and about 8 miles south of Belhaven. The creek is entered from deep water in Pungo River through a dredged channel that leads to a turning basin at the head of **North Prong**, about 1.1 miles above the entrance. In 1977, the channel had a midchannel controlling depth of 8 feet; thence in 1983, a reported depth of 4 feet in the basin. The channel is marked by lights, daybeacons, and a buoy.

(200) Two small marinas are on North Prong. Berths with electricity, diesel fuel, limited marine supplies, gasoline, and launching ramps are available; minor hull repairs can be made.

(201) **Slade Creek**, which empties into Pungo River from eastward about 4 miles above the mouth, in 2006, had reported depths of 3.6 feet or more. A pile was reported in the creek entrance about 0.2 mile NNW of July Point at about 35°27'32"N., 76°33'21"W. An unmarked fish haven is about 1 mile northwest of the creek entrance in about 35°28'15"N., 76°34'18"W.

(202) **Pungo Creek** (see also chart 11554) empties into Pungo River from westward about 8 miles above the mouth of the river and 1.5 miles southwestward of Belhaven. A highway bridge, 2.5 miles above the mouth of the creek, has a 32-foot fixed span with a clearance of 8 feet. The overhead power cable just north of the bridge has a clearance of 35 feet. In 1983, the creek had reported depths of 7 feet or more to the bridge and thence 5 feet for about 2 miles. A light and a daybeacon mark the entrance to the creek.

(203) **Pantego Creek** (see also chart 11554) just northward of Pungo Creek, empties into Pungo River northward about 9 miles above the mouth of the river. Timber breakwaters, in fair condition, extend from both shores of the entrance. The outer ends of the breakwaters are marked by lights.

(204) A dredged channel leads from Pungo River through the breakwaters and to the basin at Belhaven just below State Route 92 highway bridge. In 2000, the reported midchannel controlling depth to the basin was 8.9 feet. Above the dredged channel, in 1963, there were depths of about 7 feet for 1 mile above the bridge, thence 4 feet to the highway bridge at the town of **Pantego**; lights and daybeacons mark the dredged channel. State Route 92 highway bridge at Belhaven has a 32-foot fixed span with a clearance of 13 feet.

(205) **Belhaven**, on the northeastern side of the entrance to Pantego Creek, has an excellent harbor for small craft. The town is connected with the interior by highway and railroad. Seafood, grain, and lumber are shipped from here. Marine supplies can be obtained in the town, and hotel accommodations are available.

(206) Berthage, electricity, gasoline, diesel fuel, water, ice, and marine supplies can be obtained at the small-craft facilities on the north side of the creek at Belhaven, just inside of the breakwater. One of the facilities has a marine railway that can handle craft up to 60 tons for engine and hull repairs. A launching ramp is also available.

(207) **Goose Creek**, opposite the entrance to Pungo River, empties into Pamlico River from southward about 7 miles above the mouth of the river. The dredged channel of the Intracoastal Waterway crosses the shoals, which obstruct the mouth of the creek, and passes southward to **Upper Spring Creek** and the land cut which connects with Bay River.

## Chart 11554

(208) **South Creek**, about 11 miles above the entrance to Pamlico River, empties into the river from the southward. The deeper entrance is southward of **Indian Island** and the shoal extending westward from that island to **Hickory Point** (35°21.8'N., 76°41.9'W.), the north point at the entrance to the creek. In 1983, a reported draft of 5 feet could be taken through the channel across the shoal west of Indian Island; a light and a daybeacon mark the best water. The creek has depths of 7 feet or more for 4 miles above Hickory Point. Above this point, a dredged channel leads to Aurora, and thence to Idalia, about 9 miles above Hickory Point. In 1977, the midchannel controlling depth was 4 feet to Aurora; thence in 1976, a centerline depth of 3½ feet to Idalia. The channel is marked by daybeacons as far as Aurora.

(209) **Aurora** is a town on the west side of South Creek, about 7 miles above Hickory Point. An oil dock here is in ruins. State Route 33 highway bridge, with a 37-foot fixed span and a clearance of 5 feet, crosses the creek at Aurora. Small boats use the creek as far as **Idalia**, about 2 miles above Aurora.

(210) A channel, marked by private daybeacons, leads to a barge slip at a phosphate plant on the north side of South Creek about 3.9 miles southwest of Hickory Point. In 1983, the slip had reported depths of 10 feet.

(211) **Bond Creek** and **Muddy Creek** share a common entrance close eastward of South Creek, about 1 mile southward of Hickory Point. The town of **South Creek**, about 0.5 mile above the entrance, is bordered on the west by Bond Creek, and on the east by Muddy Creek. The entrance is marked by daybeacons. A crabmeat packinghouse is on the east side of town. In 1983, a reported depth of 5 feet could be taken in Bond Creek for about 2.3 miles. In 1990, an obstruction was reported in Bond Creek in about 35°20'26"N., 76°41'49"W. Gasoline and diesel fuel are available at the crabmeat packinghouse pier on Muddy Creek.

(212) **North Creek** empties into Pamlico River directly opposite South Creek. The channel had a reported centerline depth of 4 feet for about 1.5 miles in 1983, and is marked by a light and daybeacons, but its navigation should not be attempted by strangers. In East Fork, the

channel, in 1983, had a reported centerline depth of 5 feet for 1.5 miles above the entrance.

(213) A ferry, operated by the State Roads Commission, crosses Pamlico River about 15 miles above the mouth. The marked channels leading to the northern terminal in **Gaylord Bay**, about 3.5 miles westward of North Creek, and to the southern terminal about 3 miles westward of Hickory Point, had reported depths of 7 feet in 1983.

(214) A privately dredged channel leads to a basin of a phosphate plant on the south side of Pamlico River, about 15.5 miles above the mouth and 4 miles westward of Hickory Point. The channel is marked by private daybeacons. In 1983, the reported controlling depth was 10 feet. The structures at the plant are the most conspicuous objects in the area.

(215) **Durham Creek** empties into Pamlico River from southward 17.5 miles above the mouth and 6.5 miles westward of Hickory Point. In 1983, local knowledge was advised to pass over the bar across the entrance to the creek, thence depths of 3 feet were reported available to Bonnerton, 4 miles above the entrance. A fixed highway bridge with a clearance of 2 feet crosses the creek at Bonnerton. A daybeacon marks the entrance.

(216) **Bayview** is a pleasure resort on the north bank of Pamlico River 6.5 miles northwestward of Hickory Point and about 2 miles eastward of the entrance to Bath Creek. Small tourist cabins are available, and a good secondary road connects with State Route 92 highway northward. The nearest rail connections are at Washington, about 20 miles distant by highway. Gasoline and some supplies are available at Bayview, and there is a small-boat launching ramp. All of the docks at Bayview are in ruins. An unmarked fish haven is about 0.7 mile southwest of Bayview in about 35°25'55"N., 76°48'25"W.

(217) **Bath Creek**. opposite Durham Creek, flows southward into Pamlico River 8 miles northwestward of Hickory Point. In 1983, the reported controlling depths were 5 feet to the bridge at the town of Bath, thence 4 feet for about another 1.7 miles. The most difficult part of the channel to Bath is the entrance, where a shoal extends halfway across from the west side and drops off abruptly. The channel is marked by lights and daybeacons to a point about 0.35 mile southward of the highway bridge. The outer edge of the shoal is marked by a light. Numerous fish traps are off the creek entrance during the fishing season from January through May.

(218) The State Route 92 highway bridge at Bath has a 37-foot fixed span with a clearance of 13 feet. Overhead cables close northward of the bridge have a clearance of 24 feet. In 2004, the bulkhead below the bridge had a reported depth of 6 feet alongside; and in 1983, a small dock north of the bridge had a reported depth of 3 feet alongside. Gasoline and some supplies are available at Bath, and there is a small-boat launching ramp.

(219) **Back Creek** empties into the east side of Bath Creek about 1 mile above its mouth. A highway bridge with a 41-foot fixed span and a clearance of 7½ feet crosses the creek about 0.5 mile above the mouth. An overhead power cable with a clearance of 43 feet crosses the creek just west of the bridge. A launching ramp is available just below the bridge.

(220) Pamlico River above Bath Creek is usually fresh.

(221) **Blounts Creek** flows northward into **Blounts Bay**, which is on the south side of Pamlico River, about 25 miles above the mouth. A highway bridge, 0.2 mile above the entrance of the creek, has a 36-foot fixed span with a clearance of 15 feet. Overhead power and telephone cables immediately southward of the bridge have a reported clearance of 18 feet. The entrance to the creek is marked by a buoy, however, local knowledge is advised. Above the entrance, the creek, in 1963, had depths of 5½ feet or more for about 1 mile above the bridge and 3 feet for an additional 2 miles.

(222) **Broad Creek**, on the north side of Pamlico River opposite Blounts Bay, in 1975, had a reported centerline controlling depth of 5 feet from the entrance to the **Washington Yacht and Country Club**, a distance of 1 mile, thence 4 feet for another 1.3 miles. The channel is marked by lights, daybeacons, and "no wake" markers. Gasoline, water, and electricity are available at the piers of the private club, which has 4 feet of water alongside. Just south of the yacht club is a pier with 4 feet alongside where only covered storage is available. Two marinas about 0.25 mile below the yacht club have berths with electricity, marine supplies, and launching ramps. Both marinas have mobile 30-ton lifts; hull, engine, and electronic repairs can be made. An overhead power cable with a reported clearance of 30 feet crosses the creek about 0.3 mile northward of the yacht club.

(223) **Whichard Beach** is on the south side of the Pamlico River about 4 miles above Blounts Bay and about 0.4 mile above **Fork Point** at the junction of Pamlico River and **Chocowinty Bay**. A marina at Whichard Beach has berths, gasoline, limited marine supplies, water, ice, provisions, and launching ramps. Hull and outboard engine repairs can be made.

(224) **Runyon Creek** is on the north side of Pamlico River at Washington, N.C. Route 32 highway bridge and the railroad bridge crossing the creek just above the mouth have 18-foot fixed spans and a clearance of 4 feet. In 1983, there was reported depth of 4 feet available in the channel immediately north of the highway bridge. A launching ramp near the bridge is available.

(225) **Washington**, 32 miles above the mouth of Pamlico River, is the seat of Beaufort County and an important business center with communications extending to nearly all points on Pamlico River and Pamlico Sound. The town has restaurants, hotels, and motels. Marine supplies are available.

(226) Two swing bridges cross the river at Washington. The railroad bridge has a clearance of 7 feet; the west draw is closed to navigation. The U.S. Route 17 highway bridge, about 0.7 mile above, has a clearance of 6 feet. (See **117.1 through 117.59 and 117.831**, chapter 2, for drawbridge regulations.) The overhead power cable

close westward of the highway bridge has a clearance of 75 feet.

(227) A county hospital is at Washington.

(228) The Washington City Waterfront lies on the eastern side of the Pamlico River, after passing the railroad bridge and 0.3 mile before the U.S. Route 17 highway bridge. The bulkhead extends approximately 1,700 feet and has both small craft slips and tie-up dockage. Electricity, water and pump-out station are available. Depths range from 18 feet at the outermost slips to 9 feet at the inner slips and 7 feet along the bulkhead. Boats up to 60 feet in length can be accommodated in the outermost slips. The North Carolina Estuarium is located at the waterfront.

(229) Washington has rail connections with two Class I railroads, and highway connections with U.S. Route 17 and N.C. Route 32.

(230) A highway swing bridge with a clearance of 5 feet at extreme high water and 10 feet at low-water stage crosses the Tar River at **Grimesland**, about 7 miles above Washington. (See **117.1 through 117.59 and 117.831**, chapter 2, for drawbridge regulations.) An overhead power cable about 5 miles above Grimesland has a clearance of 77 feet.

## Chart 11548

(231) **Mouse Harbor**, **Big Porpoise Bay**, and **Middle Bay** are small unmarked shallow bays on the east side of **Goose Creek Island** on the western side of Pamlico Sound between **Pamlico Point Light PP** (35°18'49"N., 76°27'00"W.) and Jones Bay. The light marks the south side of the entrance to Pamlico River, and is shown 25 feet above the water from a multi-pile structure with a white and black diamond shaped daymark. Mouse Harbor Ditch and **Leary Canal** are two small-boat passages which connect Mouse Harbor with Clark Creek on Pamlico River, and Big Porpoise Bay with Middle Bay. These passages are not being maintained, and are used only by shallow-draft skiffs; local knowledge is advised. The three bays are frequented only by local fishermen.

(232) **Jones Bay** is on the western side of Pamlico Sound about 7 miles southward of Pamlico Point Light PP and just northward of the entrances of Bay and Neuse Rivers. In 1983, the bay had reported depths of 6 feet or more for 4 miles above its mouth. The entrance is somewhat obstructed by shoals through which a marked channel leads into the bay. On the north side, near the head of the bay, is the town of **Hobucken**. Small craft bound for the town can land in the cove 0.8 mile above **Drum Creek**, which indents the north shore of the bay about 3.5 miles above the entrance.

(233) **Ditch Creek**, on the opposite side of Jones Bay from Drum Creek, leads to an old canal through which small boats can be taken at high water to Bay River. Hobucken is discussed further in chapter 12 in connection with the Intracoastal Waterway which crosses the head of Jones Bay and links it with Goose Creek on the north and Bay River on the south. **Hobucken Coast Guard Station** fronts the Intracoastal Waterway at Hobucken.

(234) The approach to Jones Bay from eastward is over or around **Brant Island Shoal**, which extends for 10 miles in a southeasterly direction from the north side of the entrance to the bay. For 6 miles southeastward to Brant Island Slue Light 1, the shoal has depths of 2 to 3 feet; between that light and Brant Island Shoal Light BI at the outer end are depths of 5 to 8 feet. The wreck of the GOVERNOR SCOTT FERRY is about 0.7 mile east of Light BI and is marked by a light. In 1991, a sunken wreck was reported between Brant Island Shoal and Royal Shoal in about 35°07'14"N., 76°12'44"W. Other wrecks and obstructions are west and south of Brant Island Shoal Light BI.

(235) The **danger zone** of a bombing and rocket firing area is in Pamlico Sound westward of the entrance to Jones Bay. Numerous lights and daybeacons mark the perimeter of the danger zone. (See **334.420**, chapter 2, for limits and regulations.) In July 1983, Brant Island (35°12.6'N., 76°26.5 'W.) was reported no longer visible at low water.

## Charts 11544, 11548, 11552

(236) **Bay River** about 10 miles southward of Pamlico Point Light PP empties into the western part of Pamlico Sound between Jones Bay and the mouth of Neuse River. The natural channel, from the entrance to off the mouth of Trent Creek about 12 miles above the entrance, is marked by lights and daybeacons and, in 1963, had depths of 9 feet or more. It can be followed readily. Above this point, a dredged channel leads to Bayboro, which is practically the head of navigation. In 1983, the reported controlling depth was 10 feet. The dredged channel is marked by daybeacons to Stonewall. An overhead power cable crossing the river about 0.3 mile below Bayboro has a clearance of 75 feet.

(237) In 1986, a visible piling extending about 10 feet above the water was reported to be about 500 yards east of Bay River Light 1 in about 39°09'47"N., 76°31'42"W.; caution is advised.

(238) The route of the Intracoastal Waterway is along Bay River for 4 miles, thence northward through Gale Creek.

(239) **Vandemere** is a town on the north side of Bay River 8 miles above the mouth. Gasoline, diesel fuel, a launching ramp, and some supplies are available. There are two marine railways that can haul out vessels up to 65 feet in length for hull repairs and there is a machine shop with engine repair service. In 1983, the reported controlling depth was 8 feet to Vandemere, and thence 8 feet alongside the piers and 4 feet at end of railways.

(240) **Stonewall** is a small town on the south side of the river 14 miles above the mouth; most of its docks are in ruins.

(241) **Bayboro**. 15 miles above the mouth of the river, has docks in fair condition on the east side of the creek leading to Mill Pond. In 1983, depths of 7 feet were reported alongside the oil and fish docks. Gasoline, ice, and some supplies are obtainable here. Navigation above Bayboro is restricted by fixed bridges at the town.

(242) **Neuse River** rises in the northern part of North Carolina and flows for about 250 miles in a general east-southeasterly direction into the western end of Pamlico Sound. Its mouth is about 5 miles wide, but is reduced to a navigable width of about 2 miles by shoals which extend from either side. The river has natural depths of 13 feet or more for 25 miles above its mouth. Strangers should not attempt to navigate the river above this point. The river channel is marked by lights, buoys and daybeacons to about 4 miles above the city of New Bern, 34 miles above its mouth.

### Tides

(243) Neuse River has practically no tide, the variation in water level being due principally to winds. Easterly winds cause high water and westerly winds low water, the maximum variations with heavy gales amounting to about 2 feet above or below the normal in the lower part of the river, and about 3 or 4 feet at New Bern. Freshets of 10 to 20 feet occur in the upper reaches of the river above New Bern, but have little effect at or below the town.

(244) **Broad Creek** empties into the north side of Neuse River about 4 miles above the mouth. In 1983, the reported controlling depth in the creek was 5 feet for 2.5 miles, thence 4 feet to Whortonsville. A light marks the entrance to the creek. Grace Harbor is an artificial basin with an entrance channel that is located about 1.4 miles west of the entrance light on the south side of the creek. A full service marina is located there with transient berths, water, ice, electricity, gasoline, and diesel fuel. In 2010, the approach and alongside depths were reported to be 8 feet. **Pamlico** is a village on the south side of the creek, 3 miles above the entrance. **Whortonsville** is on the east side of the entrance to **Brown Creek** about 0.5 mile northeast of Pamlico, and on the opposite side of Broad Creek. Berthage, electricity, water, limited marine supplies and a launching ramp are available at the pier which has a depth of 5 feet alongside.

(245) **South River** flows into the south side of Neuse River about 8 miles above the mouth. The entrance is marked by lights. In 2001, the channel had a reported midchannel depth of 10 feet for about 3 miles; thence in 2000, there was 6 feet for another 4.5 miles.

(246) The **danger zones** of several bombing, rocket firing, and strafing areas are in Turnagain Bay and Rattan Bay, in Neuse River, and in Long Bay and West Bay in Pamlico Sound. (See **334.420**, chapter 2, for limits and regulations.)

## Charts 11552, 11541

(247) **Garbacon Shoal** extends halfway across Neuse River from the southern shore 10 miles above the mouth, leaving a clear width of about 0.8 mile between the 12-foot contours. The outer end of the shoal is marked by a light.

(248) **Whittaker Creek**, on the north side of Neuse River opposite Garbacon Shoal, is marked by lights and daybeacons. In 2003, the privately dredged entrance channel had a reported controlling depth of 6.1 feet. An uncharted private range marks the entrance channel. Several small-craft facilities are in the creek. (See the small-craft facilities tabulation on chart 11541 for services and supplies available.)

(249) **Oriental** is a small town at the entrance to **Smith Creek** on the north bank of the Neuse River about 11 miles above the mouth. Fishing is the principal industry and seafood is trucked to the interior. The harbor is protected by a rubble-mound breakwater marked by a light off the end.

(250) A dredged channel, marked by lights and daybeacons, leads from Neuse River to a basin at Oriental. In 2009, the midchannel controlling depth in Smith Creek was 7 feet with 7 to 10 feet in the basin. In 1992, shoaling to 3 feet was reported northeast of Windmill Point, on the west side of the channel in about 35°01'14"N., 76°42'00"W. The harbor provides excellent anchorage for small craft. Two marinas are in the harbor and basin. (See the small-craft facilities tabulation on chart 11541 for services and supplies available.)

(251) A fixed highway bridge 0.2 mile above the entrance to Smith Creek has a clearance of 45 feet. An abandoned railroad bridge, in ruins, crosses **Morris Creek** about 1 mile above the highway bridge. **Greens Creek** joins Smith Creek at **Dewey Point** just above the highway bridge. Good anchorage was reported in Greens Creek for vessels drawing less than 4 feet.

(252) **Adams Creek** empties into the south side of Neuse River about 13 miles above the mouth. The creek is part of the Intracoastal Waterway and is described in chapter 12.

(253) **Clubfoot Creek** flows into Neuse River from southward about 15 miles above the mouth. The approach is marked by a daybeacon and the entrance by a light and daybeacons. The channel southward of the light is narrow with shoals rising abruptly on both sides. Depths in the channel, in 2002, were reported to be 4.5 feet or more for 3 miles above the light. A marina on the west shore of Clubfoot Creek, at the entrance to Mitchell Creek, has berths, electricity, gasoline, diesel fuel, pump-out station, water, and ice.

(254) **Dawson Creek**, on the north side of Neuse River about 14 miles above the mouth, is entered through a dredged channel, marked by daybeacons, that leads from the river to the mouth of the creek. In 1983, the reported controlling depth was 5 feet. A highway bridge

with a 32-foot fixed span and a clearance of 13 feet crosses the mouth of the creek at **Janeiro**.

(255) A ferry crosses Neuse River about 18 miles above the mouth between Cherry Point and **Minnesott Beach**.

(256) **Hancock Creek** is on the south side of Neuse River about 20 miles above the mouth. In 1983, the reported controlling depths were 7 feet through the narrow entrance channel to the Marine Corps Air Station basin just inside the mouth, thence 12 feet in the basin. Lights and daybeacons mark the channel. A launching ramp and pier are on the east side of the creek about 1.5 miles above the mouth.

(257) A **restricted area** at the Cherry Point Marine Corps Air Station, which includes Hancock and Slocum Creeks and their tributaries, is described in **334.430**, chapter 2.

(258) A water tank at the air station is conspicuous.

(259) **Slocum Creek**, on the south side of Neuse River 22 miles above the mouth, in 1983, had a reported controlling depth of 4 feet for 4 miles to the forks. Along the East Prong, a foot bridge across the creek obstructs passage for further navigation. A light and daybeacons mark the critical parts of the channel at the entrance to the creek. A highway bridge with 32-foot fixed span and a vertical clearance of 3 feet crosses 3 miles above the entrance. An overhead cable with a clearance of 39 feet crosses the creek just below the bridge.

(260) **Beard Creek** is on the north side of Neuse River opposite Slocum Creek. The mouth of the creek is marked by a daybeacon. The reported controlling depth from the entrance to the highway bridge, 2.3 miles upstream, was 4 feet in 1983. The bridge has a fixed span and a clearance of about 4 feet. Good anchorage may be found off the eastern side of the entrance.

(261) **Goose Creek**, on the northeast side of Neuse River 27 miles above the mouth, in 2000, had reported depths of 4.4 feet or more to **Wood Landing**, 3 miles above the entrance. **Upper Broad Creek**, on the northeast side of Neuse River 28 miles above the mouth, had reported depths of 5 feet or more, in 1983, to **Lees Landing** 4 miles above the entrance. Overhead power cables about 1.4 miles above the mouth and at the landing have clearances of 35 feet and 40 feet, respectively. The entrance is marked by daybeacons.

(262) **Fairfield Harbour** is a resort and residential community on the east side of **Northwest Creek**, about 1 mile west of Upper Broad Creek. The entrance to Northwest Creek is marked by a light; depths of 4 feet can be carried through the unmarked creek. A marina is on the east side of the creek, about 0.7 mile above the entrance. In 1983, depths of about 6 feet were alongside the marina piers; berths, electricity, gasoline, diesel fuel, water, ice, pump-out station and launching ramp are available.

(263) **New Bern**, a city on the west bank of Neuse River 34 miles above the mouth, is the seat of Craven County and an important center for this area. The city has many points of historical interest including Tryon Palace, an 18th century restoration. A county hospital is here, and there are numerous restaurants, hotels, and motels. Gasoline, diesel fuel, pump-out station, berthing with electricity, water, ice, marine supplies, and provisions are available. Hull, engine and electronic repairs can be made; lift to 30 tons.

(264) Barge traffic in petroleum products, crushed rock, pulpwood, and chemicals constitutes the principal commerce at New Bern. In addition to vessel repairs, the city supports a considerable boat and barge building industry.

(265) The rectangular lighted clock tower atop City Hall is visible for about 6 miles downriver and is an excellent landmark. Vessels proceeding up the river to New Bern are advised to stay in the channel because of the numerous fish traps scattered indiscriminately throughout the unmarked areas. The river is slightly brackish except during freshets.

(266) **Weather, New Bern and vicinity**. New Bern's climate is influenced by both the Atlantic Ocean and Pamlico Sound, particularly in the winter. Winds blowing from a southerly or easterly direction have a moderating effect on temperatures.

(267) The long hot summers begin in May when afternoon temperatures occasionally reach 90°F (32.2°C), and reach a peak in July when they average 89°F (31.7°C); they begin to fall off by the end of September. The average high temperature in New Bern is 73°F (22.8°C) and the average low is 52°F (11.1°C). July is the warmest month with an average high of 80°F (26.7°C) and an average low of 71°F (21.7°C). January is the coolest month with an average high of 55°F (12.8°C) and an average low of 34°F (1.1°C). Each month, May through September has recorded temperatures in excess of 100°F (37.8°C) while each month, October through May has had temperatures below freezing. The warmest temperature on record in New Bern is 106°F (41.1°C) recorded in July 1952 while the coldest temperature on record is -4°F (-20°C) recorded on Christmas Morning 1989. The average number of days with a maximum temperature of 90°F (32.2°C) or warmer is 41 while the average number of days with a minimum temperature of 32°F (0°C) or cooler is 50.

(268) Rainfall averages 52 inches (1,321 mm) annually; with July through September contributing most. The wettest month is July with 6.77 inches (172 mm) and the driest month is April with an average of 2.97 inches (75.4 mm). An average of 2 inches (51 mm) of snow falls at New Bern each winter and can be expected any time between late November and early April. The greatest snowfall during a 24-hour period was 13 inches (330.2 mm) in January 1965. Snowfall amounts in excess of one foot (304.8 mm) have been recorded in January and February. (See Appendix B for the **New Bern climatological table.)**

(269) Most of the wharves and piers at New Bern handle barge traffic. These privately operated facilities are on the south side of the city on Trent River, and on the east side on Neuse River.

(270) A marina on the south side of Trent River just southwestward of the railroad bridge has three 100-foot-long piers with depths of 9 feet alongside. Berths, electricity, gasoline, diesel fuel, water, and dry storage are available; hull and engine repairs can be made.

(271) New Bern is served by two Class I railroads. The city is also served by commercial airlines.

(272) U.S. Route 17 highway bridge over Neuse River just below New Bern has a fixed span with a clearance of 65 feet. The railroad bridge, 1.7 miles above the highway bridge, has a swing span with a clearance of 0 feet at extreme high water and 2 feet at low water. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) In 1984, the northeast draw of the bridge was reported closed to navigation. The overhead power cable at the railroad bridge has a clearance of 50 feet over the main channel.

(273) A small-craft repair facility is on the northeast side of the river just above the bridge at **Bridgeton**, opposite New Bern. A 35-ton mobile hoist and surfaced ramp are available. Hull, engine, sail, electrical, and electronic repairs can be made.

(274) **Trent River** empties into Neuse River on the south side of New Bern. The river channel above New Bern is marked by lights and daybeacons for a distance of about 5.5 miles.

(275) U.S. Route 70 highway bascule bridge over Trent River at the mouth has a clearance of 14 feet. (See **117.1 through 117.59 and 117.843**, chapter 2, for drawbridge regulations.) the railroad bridge, about 0.2 mile westward of the highway bridge has a swing span with a clearance of 5½ feet. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) Fixed twin highway bridges about 0.3 mile southwest of the railroad swing bridge, have clearances of 45 feet. Overhead power cables cross Trent River about 1.8, 4.8, 8.8, and 14 miles above its mouth; clearances are 65 feet, 48 feet, 55 feet, and 63 feet, respectively.

(276) At **Pollocksville**, 15 miles above the mouth, U.S. Route 17 highway bridge has a 48-foot fixed span with a clearance of 5 feet.

(277) A fixed highway bridge with a 32-foot span and a clearance of 2 feet at high water and 12 feet at low water crosses Trent River, about 6.5 miles above Pollocksville.

(278) **Brice Creek** enters Trent River from the east about 1.7 miles above the mouth. In 1983, the reported controlling depth to the highway bridge 1 mile above the mouth was 5 feet. The highway bridge has a 35-foot fixed channel span with a clearance of 15 feet. An overhead power cable with a clearance of 14 feet is just north of the bridge.

## Chart 11548

(279) **West Bay** is a large irregularly shaped body of water on the southwest side of Pamlico Sound west of Cedar Island and just southeastward of Neuse River entrance. The shores of the bay and its numerous branches are marshy, and it is of little importance other than for its oyster beds. In 1983, a reported depth of 6 feet could be taken into the three principal arms of the bay through narrow and devious channels. Lights and daybeacons mark the entrance to West Bay and the channels in **West Thorofare Bay** and **Long Bay**, the middle and west arms, respectively.

(280) Hooked-shaped **Royal Shoal** extends northwestward from the vicinity of Ocracoke Inlet. The shoal, which bares in one place and is covered 1 to 4 feet elsewhere, is marked by four lights and a daybeacon. Tows and other vessels sometimes anchor inside the hook when the seas are too rough to make headway in the sound. In 1983, however, it was reported that this anchorage was not a good one.

(281) A dangerous sunken wreck is reported to be about 0.4 mile north of Royal Shoal Light 5RS in about 35°09.8'N., 76°09.5'W. Caution is advised.

## Charts 11550, 11545

(282) **Core Sound** extends southwesterly along and just inside the barrier beach from the south side of Pamlico Sound to Cape Lookout, a distance of about 27 miles; the width varies between 2 and 3 miles. The sound is mostly shoal, but an improved channel, well marked by lights, extends along its entire length. Behind Cape Lookout, Core Sound is joined by Back Sound and The Straits, both of which connect with Beaufort Harbor.

### Channels

(283) The main route from Pamlico Sound to Beaufort Harbor is via a marked channel through Wainwright Slue, Core Sound, The Straits, and Taylor Creek. The alternate route to Beaufort Harbor is via a marked channel which leads southward along the east side of Harkers Island from a point just eastward of The Straits, thence southward of the island through Back Sound, thence along the westerly side of the island where it rejoins the main route. In 1983, the midchannel controlling depth in the dredged sections was 4 feet in the main route to Taylor Creek, thence in 2009, 3 feet was in the alternate route from Harkers Island East Channel Light 14 to Daybeacon 1.

(284) From The Straits, the main route to Beaufort Harbor leads southwestward to the junction with the alternate route, westward of Harkers Island, thence westward along the north side of **Middle Marshes** to abeam **Lenoxville Point** where it turns sharply northward and then westward into **Taylor Creek**. The route is then westward through Taylor Creek to the wharves at Beaufort.

### Currents

(285) Tidal currents of 1 to 2 knots may be experienced in the southern part of Core Sound.

(286) The channels from Core Sound to Beaufort Inlet via The Straits and Back Sound are described later in this chapter.

## Chart 11550

(287) **Wainwright Slue** is a small anchorage used by local mariners in the northeastern entrance to Core Sound. Shelter from the sea is provided by surrounding shoals that have depths of 1 to 3 feet over them. The reported depth in the anchorage was 8 feet in 1983. The marked channel into Core Sound is through Wainwright Slue and east of **Wainwright Island**.

(288) **Cedar Island Bay**, off the northeast side of Cedar Island, makes into the northwest side of Core Sound. The bay is used mainly by fishing boats. An improved channel leads from the entrance, about 2.8 miles southwestward of Wainwright Island, to a small-craft basin on the west side of the bay. In 2001, the reported midchannel controlling depth was 4 feet to the basin; thence in 1973, 5 feet in the basin. The channel is marked by lights and daybeacons, and by a light at the entrance. Gasoline, diesel fuel, and water can be obtained at the pier at the head of the basin. A radar dish antenna and a telephone tower are conspicuous on the south entrance point to the bay.

(289) The terminal of the Ocracoke-Cedar Island ferry, marked by private lights at the entrance, is at the north end of Cedar Island about 5.2 miles westward of Wainwright Island. The passenger and vehicle ferry operates daily to Ocracoke on the outer beach.

(290) **Thorofare Bay**, on the northwest side of Core Sound and 8 miles from the northeastern entrance, indents the eastern shore of Cedar Island about 3 miles southward of Cedar Island Bay. The bay is connected with West Thorofare Bay by a land cut known as the **Thorofare**.

(291) A dredged channel leads through Thorofare Bay, and thence through the Thorofare to West Thorofare Bay. This passage provides a convenient route to local fishermen from Core Sound to West Bay and to the mouth of Neuse River. In 2001, the reported midchannel controlling depth was 3 feet from West Thorofare Bay to Core Sound. The critical part of the channel is marked by lights and daybeacons.

(292) A fixed highway bridge near the eastern end of the Thorofare has a clearance of 45 feet.

(293) **Atlantic**, a town on the northwest side of Core Sound about 2 miles southwestward of the eastern entrance to Thorofare Bay, has a restaurant and a motel. A cluster of four aluminum-colored fuel storage tanks on the beach and a tall church spire are prominent from seaward.

(294) A marked, dredged channel leads northeastward from the main channel in Core Sound to a basin at Atlantic, about 0.5 mile above the entrance, thence continues northeastward behind a breakwater extending from **White Point** for another 0.3 mile to a basin at **Little Port Brook**. In 2009, the controlling depth was 6.1 feet in the channel; thence in 2001, 3½ feet was reported in the basin at Atlantic; thence in 2009, there was shoaling to less than ½ foot in the channel to the basin at Little Port Brook, thence 5.2 feet was in the basin. The basin at Atlantic is used mainly by fishing boats. Gasoline, diesel fuel, water, ice, provisions, and limited marine supplies are available. A spur channel, with a reported depth of 6 feet, leads to a marine railway just southward of the basin; craft up to 45 feet can be handled for hull repairs.

(295) U.S. Route 70 highway connects with Beaufort and Morehead City.

## Chart 11545

(296) **Sealevel** is a small fishing community about 3 miles southwestward of Atlantic on the west shore of Core Sound. A restaurant and a motel are in town. A dredged channel leads from the sound to a basin at Sealevel. In 2001, the reported controlling depth was 3 feet to the basin and 4 feet in the basin. The channel is marked by a light and a buoy.

(297) A private hospital is in Sealevel.

(298) A pier, used mainly by fishing vessels, is in the basin; depths of 8 feet are reported alongside. Gasoline, diesel fuel, water, and ice are available. Limited amounts of marine supplies can be obtained in town.

(299) Sealevel is connected with Beaufort and Morehead City by U.S. Route 70 highway.

(300) **Davis**, another small fishing community, 5 miles southwestward of Sealevel, ships seafood to the interior by truck. A dredged channel leads from Core Sound to a basin at Davis. In 1982, the controlling depth to the basin was 3 feet, with 3 to 4 feet in the basin. Gasoline, diesel fuel, water, and ice are available at a pier in the basin; depths of 4 feet are reported alongside. There are cabins and a restaurant at Davis; limited amounts of marine supplies also can be obtained here.

(301) Davis is connected with Beaufort and Morehead City by U.S. Route 70 highway.

(302) A pier, with reported depth of 6 feet alongside, is on the north side of **Oyster Creek**, about 1 mile northward of Davis. The entrance channel into the creek is marked by a light and a daybeacon. A machine shop, near the pier, is available for engine repairs. U.S. Route 70 highway bridge, about 0.4 mile above the entrance, crosses Oyster Creek just above the pier. The bridge has a 41-foot fixed span with a clearance of 7 feet.

(303) **Marshallberg**. about 6 miles southwestward of Davis, is on the west shore of Core Sound and on the north side of the eastern entrance to The Straits. A dredged channel leads from the main channel in Core Sound to a basin at Marshallberg. In 1978, the midchannel controlling depth was 6 feet to and in the basin. The channel is marked by daybeacons. A boatyard on the south side of the basin has two marine railways. The longest can

handle craft to 200 tons or 200 feet for complete hull and engine repairs. In 1983, depths of 9 feet were reported alongside the boatyard. A boatyard is immediately westward of the marina. A marine railway here can handle vessels up to 125 feet in length for complete hull and engine repairs. Depths of 6 feet are reported alongside the marina and boatyard. A boatyard, about 900 yards west of the mouth of **Sleepy Creek**. 0.6 mile northwest of the basin at Marshallberg, has a marine railway that can handle craft up to 20 tons or 50 feet long for hull repairs. In 1983, the reported controlling depth to the railway was 4 feet.

(304) **Back Sound**, southward of Harkers Island, and **The Straits,** which parallel Back Sound on the opposite side of the island, provide two marked routes from Core Sound to a junction with the Morehead City Harbor Channel at Beaufort Inlet. The northern route leads westward through The Straits and along the northerly side of Middle Marshes; the southerly route leads westward through Back Sound and along the southerly side of Middle Marshes. Both routes have several shoals close to the channels. The chart is the best guide.

(305) The improved channel from Back Sound to Lookout Bight has been discussed previously.

(306) The Straits, with an average width of about 0.5 mile, but in places only 100 yards wide in the channel, also affords a through passage from Core Sound to Beaufort Harbor. The passage has been discussed previously in this chapter. A highway bridge over the western end of The Straits has a swing span with a channel width of 36 feet and a clearance of 14 feet. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) The overhead power cable close eastward of the fixed bridge has a clearance of 70 feet.

(307) **Westmouth Bay** is a cove on The Straits side of Harkers Island. A marine railway at a boatbuilding yard at the head of the bay can handle vessels to 40 feet for hull repairs. The town of **Harkers Island** in the central part of the island, has piers both on Back Sound and at the head of Westmouth Bay; depths to the piers were reported to be 2 feet in 2000. Berths, electricity, gasoline, diesel fuel, water, ice, launching ramp, wet and dry storage, and some provisions may be obtained at the piers, and there is also a small machine shop. In Westmouth Bay, depths to the piers were reported to be 3 feet in 1983. Gasoline, diesel fuel, water, ice, and some marine supplies may be obtained at the piers.

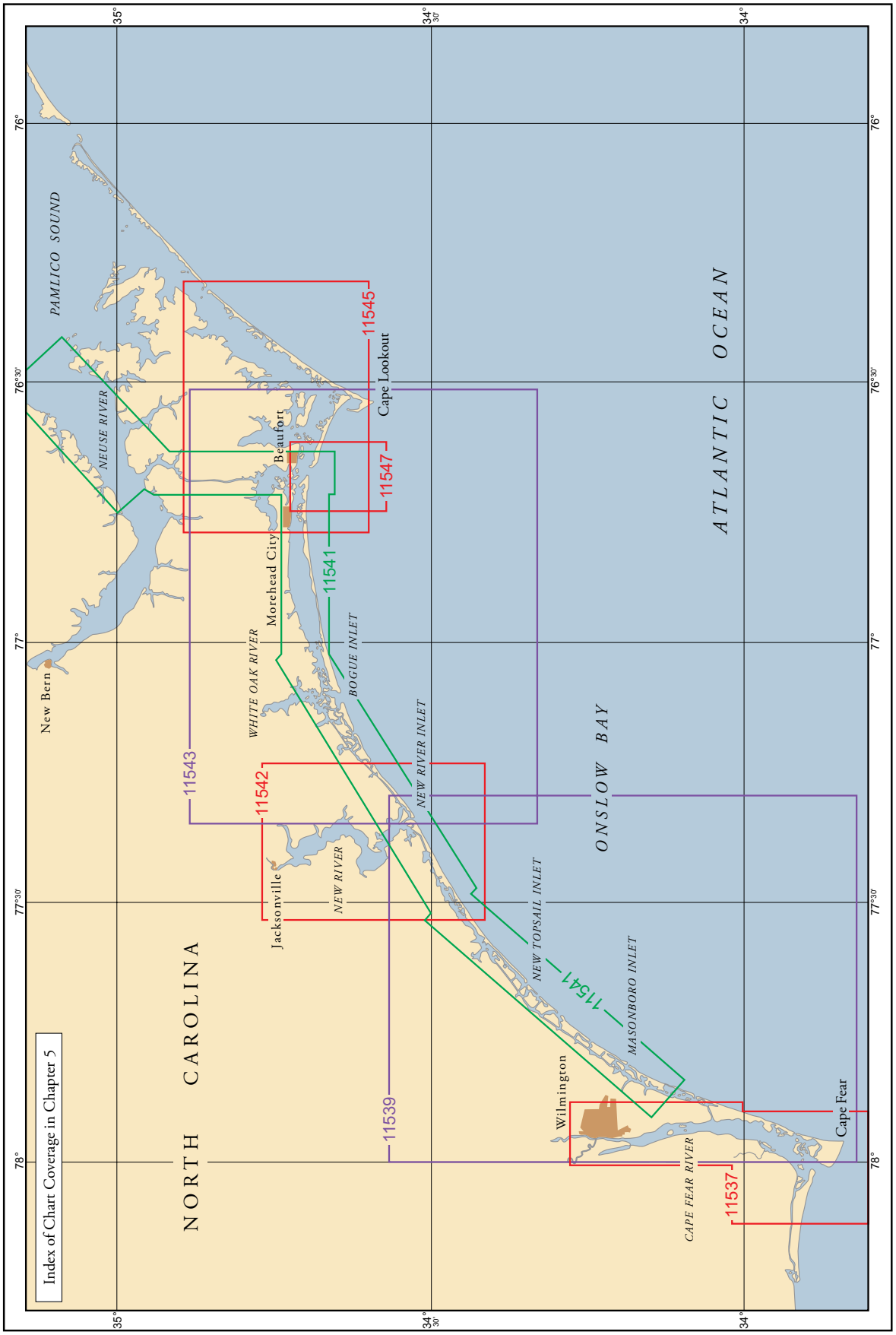
(308) Several marinas are at **Shell Point**, at the eastern end of Harkers Island. Berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, launching ramps, and wet and dry storage is available.

(309) Seafood is shipped by truck and boat from Harkers Island.

(310) A marina on the southwest point of the island has gasoline, water, ice, and some marine supplies.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 12207 | Norfolk, Elizabeth River | 36°51'N/76°18'W | 3.1 | 2.9 | 0.1 |
| 12207 | Cape Henry | 36°56'N/76°00'W | 3.5 | 3.2 | 0.1 |
| 12207 | Virginia Beach | 36°51'N/75°58'W | 3.9 | 3.6 | 0.2 |
| 12205 | Lynnhaven Inlet, Virginia Pilots Dock | 36°54'N/76°05'W | 2.6 | 2.4 | 0.1 |
| 12205 | Chesapeake Bay Bridge Tunnel | 38°58'N/76°07'W | 2.9 | 2.7 | 0.1 |
| 12205 | Duck Pier (outside) | 36°11'N/75°45'W | 3.7 | 3.4 | 0.1 |
| 12205 | Oregon Inlet Marina | 35°48'N/75°33'W | 1.2 | 1.0 | 0.1 |
| 12205 | Rudee Inlet (inside channel) | 36°50'N/75°55'W | 3.7 | 3.4 | 0.1 |
| 12205 | Sandbridge | 36°42'N/75°55'W | 3.8 | 3.5 | 0.2 |
| 12204 | Oregon Inlet | 35°46'N/75°31'W | 2.3 | 2.1 | 0.1 |
| 12204 | Kittyhawk | 36°01'N/75°43'W | 3.7 | 3.4 | 0.2 |
| 12204 | Roanoke Sound Channel | 35°48'N/75°35'W | 0.5 | 0.5 | 0.0 |
| 11555 | Cape Hatteras | 35°14'N/75°31'W | 3.5 | 3.2 | 0.1 |
| 11555 | Hatteras Inlet | 35°12'N/75°44'W | 2.3 | 2.1 | 0.1 |
| 11550 | Ocracoke Inlet | 35°04'W/76°01'W | 2.2 | 2.0 | 0.1 |
| 11550 | Ocracoke, Ocracoke Island | 35°07'N/75°59'W | 1.2 | 1.1 | 0.1 |
| 11545 | Cape Lookout Bight | 34°37'N/76°32'W | 4.6 | 4.2 | 0.2 |
| 11545 | Beaufort, Duke Marine Lab | 34°43'N/76°40'W | 3.5 | 3.2 | 0.1 |
| 11545 | Core Creek Bridge, Morehead City | 34°50'N/76°42'W | 2.3 | 2.2 | 0.1 |
| 11545 | North River Bridge | 34°47'N/76°36'W | 2.0 | 1.9 | 0.1 |
| 11545 | Morehead City, Port Terminal | 34°43'N/76°42'W | 3.6 | 3.3 | 0.1 |
| 11545 | Harkers Island Bridge | 34°43'N/76°35'W | 1.8 | 1.6 | 0.1 |
| 11541 | Bogue Inlet | 34°39'N/77°06'W | 2.5 | 2.3 | 0.1 |
| 11541 | New Topsail Inlet | 34°22'N/77°38'W | 3.4 | 3.1 | 0.1 |
| 11541 | Wrightsville Beach | 34°13'N/77°47'W | 4.3 | 4.0 | 0.1 |
| 11541 | Spooner Creek | 34°44'N/76°48'W | 1.4 | 1.3 | 0.1 |
| 11541 | Atlantic Beach Bridge | 34°43'N/76°44'W | 2.7 | 2.5 | 0.1 |
| 11541 | Coral Bay, Atlantic Beach | 34°42'N/76°46'W | 1.8 | 1.7 | 0.1 |
| 11541 | Fort Macon, USCG Station | 34°42'N/76°41'W | 3.5 | 3.3 | 0.1 |
| 11541 | Triple S Marina, Bouge Sound | 34°42'N/76°43'W | 3.2 | 2.9 | 0.1 |
| 11541 | New River Inlet | 34°32'N/77°20'W | 3.4 | 3.1 | 0.1 |
| 11541 | Newport River, Morehead-Beaufort Yacht Club | 34°46'N/76°40'W | 3.5 | 3.2 | 0.1 |
| 11541 | Morehead City Harbor, Harbor Channel | 34°43'N/76°44'W | 3.5 | 3.2 | 0.1 |
| 11541 | Beaufort, Taylor Creek | 34°43'N/76°39'W | 3.2 | 3.0 | 0.1 |
| 11541 | Ocean City Beach (fishing pier) | 34°27'N/77°30'W | 4.7 | 4.3 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011


Index of Chart Coverage in Chapter 5
NORTH CAROLINA
ATLANTIC OCEAN
ONSLOW BAY
PAMLICO SOUND
NEUSE RIVER
New Bern
WHITE OAK RIVER
Morehead City
Beaufort
Cape Lookout
BOGUE INLET
NEW RIVER INLET
NEW RIVER
Jacksonville
NEW TOPSAIL INLET
MASONBORO INLET
Wilmington
CAPE FEAR RIVER
Cape Fear
11537
11539
11541
11542
11543
11545
11547
35°
34° 30'
34°
76°
76° 30'
77°
77° 30'
78°

# Cape Lookout to Cape Fear

(1) This chapter describes the deepwater ports of Morehead City and Wilmington, and the smaller ports of Beaufort, Swansboro, Jacksonville, Wrightsville Beach, Wrightsville, Carolina Beach, and Southport. These smaller ports are principally engaged in barge, fishing, and small-craft traffic.

(2) Also discussed are the waters of Cape Fear River and its tributaries; Bogue, Stump, and Topsail Sounds; and Beaufort, Bogue, and New River Inlets, including some of the lesser inlets.

(3) The section of the Intracoastal Waterway from Morehead City to Cape Fear River is described in chapter 12.

### COLREGS Demarcation Lines.

(4) The lines established for this part of the coast are described in **80.525**, chapter 2.

### Weather

(5) The southwesterly curve of this coastline often enables it to escape direct hits from both extratropical and tropical cyclones. This sheltering effect is reflected in the mean wind speeds of Wilmington (7.7 knots) and Morehead City (8.2 knots) compared to that of Cape Hatteras (9.9 knots). This coast is also subjected to less cloud and rain than the Outer Banks while its waters are calmer.

(6) From November through March gales blow about 1 to 3 percent of the time in deeper waters. Shoreward of the 100 fathom line, from October through April, maximum winds of 45 to 55 knots have been encountered while seas of 6 feet (2 m) or more occur 30 to 45 percent of the time; maximum seas are in the 20- to 35-foot (6 to 11 m) range. Hurricanes can bring stronger winds and higher waves but usually affect this portion of the coast about once in 15 to 20 years. An exception occurred when Hurricane Bonnie ravaged the coastline from Cape Fear to Cape Lookout in August 1998 with maximum winds of 115 knots and near-record rainfall totals. Hurricanes Bertha and Fran, in 1996, made landfall within miles of each other only six weeks apart. Both ravaged the coastline from the south of Wilmington to Cape Lookout. Bertha made landfall near Surf City, North Carolina, in the late afternoon of July 12th with maximum winds of 90 knots. Then at midnight on September 6th, Fran made landfall near Cape Fear with maximum winds of 100 knots. Both storms created severe wind damage, major flooding, and near-record storm surges for the area. In September 1985, Gloria generated winds estimated at 110 knots and 40-foot (12 m) seas in these waters as it paralleled the coast before making initial landfall over Cape Hatteras.

(7) Fog is most likely during late winter and early spring when warm air occasionally moves across the relatively cool water shoreward of the Gulf Stream. Visibilities drop below 0.5 mile (0.9 km) about 2 to 3 percent of the time. Radiation fog may drift out over the coastal waters from fall through spring when land stations record visibilities below 0.5 mile (0.9 km) on 1 to 4 days per month.

### North Atlantic Right Whales

(8) Endangered North Atlantic right whales are often seen within 30 miles of the North Carolina coast and may also be seen in the approaches of the deepwater ports of Morehead City and Wilmington from November through April. (See **North Atlantic right whales**, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.)

(9) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in two Seasonal Management Area between November 1 and April 30. The first area, around the Ports of Morehead City and Beaufort, North Carolina, is defined as the waters within a 20-nm radius of 34°41'32.0"N., 76°40'08.3"W. The second is a continuous 20-nm management area running from Wilmington, North Carolina to beyond Savannah, Georgia. The area is defined as the waters contained by the following points:

(10) A: 34°10.5'N., 77°49.2'W.;

(11) B: 33°56.7'N., 77°31.5'W.;

(12) C: 33°36.5'N., 77°47.1'W.;

(13) D: 33°28.4'N., 78°32.5'W.;

(14) E: 32°59.1'N., 78°50.3'W.;

(15) F: 31°50.0'N., 80°33.2'W.;

(16) G: 31°27.0'N., 80°51.6'W.; thence due west to the shore. (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.)

## Chart 11520

(17) From Cape Lookout the coast extends 8 miles in a northwesterly direction and then curves gradually westward and southward to Cape Fear. This section, nearly 100 miles long, is similar to that between Capes Hatteras and Lookout, but the strips of land which form

it are separated from the mainland by much narrower bodies of water. As a consequence, the thick woods of the mainland can be seen from much farther seaward. The beach areas from Beaufort Inlet to Bogue Inlet and from New River Inlet to Cape Fear are undergoing rapid development. Many multistoried buildings can be seen in these areas.

(18) Depths along this stretch of coast are regular, and 4 to 6 fathoms can be taken to within 1.5 miles of the beach. The 10-fathom curve, about 10 miles offshore, is nearly parallel to the shore until eastward of Cape Fear where it bends southeastward around Frying Pan Shoals. The 20-fathom curve is from 20 to 45 miles offshore.

(19) There are numerous charted wrecks along this section of the coast, some extending as much as 75 miles offshore; the more dangerous ones are marked.

(20) A **danger zone,** near the northern end of Onslow Bay, extends offshore from Bear Inlet to about 8 miles southward of New River Inlet. (See **334.440**, chapter 2, for limits and regulations.)

(21) Between Beaufort Inlet and Cape Fear River are several inlets through which 4 to 10 feet can be carried to sheltered anchorage, but all are obstructed by shifting bars on which the sea breaks when at all rough. A sea breeze, even if light, will cause a heavy break on the bars, while a land breeze may be heavy without making the bars dangerous. Strangers bound southward in small craft should not leave a sheltered anchorage with the wind anywhere between southeast and southwest, and should find anchorage as soon as possible after the wind begins to blow from those directions. The best guide for entering or leaving the inlets is the appearance of the water, as breakers always form on the shoal areas; strangers should not attempt to enter an inlet when breakers form entirely across it.

(22) This section of the coast, due to its low relief, presents no good radar targets except for the structure of Frying Pan Shoals platform tower.

## Charts 11545, 11547

(23) **Beaufort Inlet** is about 220 miles southwestward of the Chesapeake Bay entrance and the same distance northeastward of Charleston. It is the approach to **Morehead City Harbor,** the most important coastal harbor between Cape Henry and the Cape Fear River. The ports of Morehead City and Beaufort are on the west and east sides of the harbor, respectively.

(24) **Morehead City,** about 4 miles above the Beaufort Inlet channel entrance, is a modern resort city, with marine, shopping, and service facilities, and hotels, motels, and restaurants. It is 249 miles south of Norfolk, VA, and 154 miles north of Wilmington, NC, by coastwise routes.

(25) The port of Morehead City, the first deep-draft port south of Norfolk, VA, serves as a cargo transshipment point for oceangoing vessels, barges plying the Intracoastal Waterway, rail, and trucks. The primary export is phosphate. The primary imports are sulfur products, rubber, steel, general cargo, scrap metal, ore, mica, and schist.

### Prominent features

(26) The A-frame phosphate building and the tallest water tank at the State Ports Authority Terminal, Highway 70 bridge over the Newport River, and water tanks at Beaufort, Atlantic Beach, and on Harkers Island are the most conspicuous landmarks from seaward. It is reported that under ideal conditions Cape Lookout Light and the configuration of Cape Lookout prove of some value as radar targets in making the approach to Beaufort Inlet; these targets, however, should not be relied upon too strongly.

(27) **Fort Macon State Park** is on the west side of Beaufort Inlet. The Fort Macon Coast Guard Base is close westward of the fort on **Fort Macon Creek.**

### Coast Guard

(28) A **Marine Safety Detachment** is at the Fort Macon Coast Guard Base. (See Appendix A for address.)

### COLREGS Demarcation Lines

(29) The lines established for Beaufort Inlet are described in **80.525**, chapter 2.

### Channels

(30) A Federal project provides for a channel 47 feet deep over the ocean bar at Beaufort Inlet, thence 45 feet to a turning basin off the North Carolina State Ports Authority Terminal at Morehead City with 45 feet in the turning basin's east leg and 35 feet in the west leg; thence a 12-foot channel and turning basin westward along the Morehead City waterfront as far as Tenth Street; thence a 6-foot channel to the Intracoastal Waterway in Bogue Sound. The entrance and main channels and all of Beaufort Inlet are subject to continual change. Lighted ranges and lighted buoys mark the main channel. Lights, buoys, and daybeacons mark the minor channels. (See Notice to Mariners and latest editions of the charts for controlling depths.)

### Anchorage

(31) Vessels required to anchor to await a pilot are advised to select an anchorage on a line east of the position 34°38'25"N., 76°39'26"W. Good anchorage for large vessels also may be found in the area from the sea buoy eastward to Cape Lookout in good sand-shell holding bottom. All of the anchorages are exposed from the southwest quadrant.

### Dangers

(32) Cape Lookout Shoals, previously described in chapter 4, are the principal danger in the approach to

Beaufort Inlet. Discontinued spoil areas are on both sides of the approach to the entrance channel, and a spoil area is immediately northward of the one on the west side. Lesser depths than charted may exist in these areas; caution is advised. A number of wrecks, some of which are marked, are in the approaches. A fish haven is about 3.8 miles west-northwestward of the sea buoy.

### Currents

(33) Tidal currents along Beaufort Inlet Channel attain velocities of up to about 2 knots. They usually set along the channels, but, at the entrance to Morehead City Channel, they usually set across the channel near the end of the flood period and beginning of the next ebb.

(34) Heavy swells build up in Beaufort Inlet Channel with northerly or southerly winds, making boating hazardous and entry or departure of ships difficult during unfavorable tidal conditions. Tidal conditions are hazardous near and under the causeway north of the State Ports Authority Terminal. It was reported in 1983, that the current will attain a velocity of 4 to 5 knots off the southwest corner of the State Ports Authority Terminal, and whirlpools will develop off the southeast corner at maximum tides. (See the Tidal Current Tables for predictions.)

### Weather, Cherry Point/Morehead City and vicinity

(35) The marine influence at Cherry Point/Morehead City is reflected by the average number of days the temperature reaches 90°F (32.2°C) (35 days) and falls to 32°F (0°C) or below (40 days). In midsummer, average highs reach the upper 80's (30.1° to 32.2°C) with nighttime lows about 10° to 15°F (5.6° to 8.4°C) cooler. Winters are mild as maximum temperatures usually climb to the mid 50's (12.2° to 13.3°C) with nighttime readings in the mid 30's (1.1° to 2.2°C). July is the warmest month with an average high of 88°F (31.1°C) and an average low of 72°F (22.2°C). January is the coolest month with an average high of 55°F (12.8°C) and an average low of 36°F (2.2°C). The warmest temperature on record is 104°F (40°C) recorded in June 1993 while the lowest temperature on record is -2°F (-18.9°C) recorded in January 1985. Each month, May through September, has recorded temperatures of 100°F (37.8°C) while each month, October through April, has had temperatures below freezing. The average number of days with a maximum temperature of 90°F (32.2°C) or greater is 35, while the average number of days with a minimum temperature of 32°F (0°C) or cooler is 40.

(36) More than one-third of the average 55 inches (1,397 mm) of rain falls during July, August and September, often as heavy, brief showers or thunderstorms. Measurable precipitation falls on 4 to 7 days per month on the average. July is the wettest month averaging 7.37 inches (187.2 mm) while April is the driest month averaging 2.68 inches (68.1 mm) of rainfall. Over 9 inches (228.6 mm) of precipitation fell during one 24-hour period in September 1946.

(37) Snowfall averages only 2.5 inches (63.5 mm) each year and has fallen in each month, November through April. The greatest 24-hour snowfall was 16 inches (406.4 mm) which occurred in March 1980.

(38) Visibilities are usually good although a steady southerly blow can produce haze and mist.

(39) The southerly exposure of Cherry Point/Morehead City, with only a slender, low barrier island as protection, makes it vulnerable to the destructive winds and tides of hurricanes. An average of 1.2 tropical cyclones annually, have passed within 150 miles (278 km) of Morehead City during the past 153 years (1842-1995). Most approach from the southwest or south. The principal threat of destructive winds and exceptionally high tides comes from tropical cyclones that originate in the tropical North Atlantic during August and September; particularly those that recurve northward so that the last 300 miles (556 km) or more of their approach lies over water and, which subsequently strike or pass close to the port. They also pose an additional threat of destructive tidal currents if they accelerate to forward speeds of 20 knots or more, after recurving, and make landfall within 100 miles (185 km) west of the port. The strongest recorded winds at Morehead City were 77 knots with gusts to 112 knots during Helene in September 1958. This was probably exceeded during Ione in September 1955 but no record was made; sustained winds were estimated at 82 knots with gusts to 93 knots.

(40) The exposure to the destructive winds and tides of many recurving tropical cyclones makes Morehead City unsuitable as a hurricane haven for both small craft and large ocean-going vessels. There are no sheltered berths or hurricane anchorages for deep-draft vessels. These ships should evade at sea if hurricane force winds (64 knots or more) are expected. Vessels with a large sail area should evade if winds of 48 knots or more are expected. Small recreational craft should, if possible, be removed from the water and firmly secured in a sheltered location ashore when a “Hurricane Watch” is issued. Bearing in mind that bridges will remain closed to waterborne traffic during a hurricane threat, larger shallow draft vessels should secure in those creeks and waterways farther inland, which offer the shelter of surrounding woodland.

(41) Peletier and Spooners Creeks off the Intracoastal Waterway in Bogue Sound are bounded by good piling, and the nearby woodland offers some protection from destructive winds. Damage is more likely, this close to the open ocean, from a storm surge, which may be associated with seas over-topping Bogue Banks in the case of a near strike by a hurricane. Furthermore, recent development along Bogue Banks presents the strong possibility that approaches to these creeks, via the Intracoastal Waterway, will be blocked with debris from mobile home parks and other structures on the dunes, for a considerable period after a hurricane strike. For these reasons, many craft, including fishing vessels, prefer to secure to trees long the Adams Creek Canal section of

the Intracoastal Waterway just south of the Core Creek fixed highway bridge. More detailed information may be found in the **Hurricane Havens Handbook for the North Atlantic Ocean** as mentioned in Chapter 3.

### Pilotage, Morehead City

(42) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in the foreign trade. Pilotage is optional for U.S. coastwise vessels which have on board a pilot licensed by the Federal Government.

(43) Pilotage is available from Morehead City Pilots Association, Inc., Maritime Building, 113 Arendell Street, Morehead City, NC 28557, telephone 252-726-4068, fax 252-726-9044, radiotelephone VHF-FM channels 14 and 16.

(44) The pilot boat is 44 feet long, and has a black hull with a white top and the word PILOT displayed on the sides of the house. At night, the pilot boat displays a white light over a red light. The pilot boat monitors VHF-FM channels 13, 14, and 16, and works channel 14. Pilots board vessels in the vicinity of Beaufort Inlet Channel Lighted Whistle Buoy BM (34°34'49"N., 76°41'33"W.) and east of Beaufort Inlet Channel in position 34°38.4'N., 76°39.4'W. from the pilot boat, day or night. Vessels should maintain a speed of about 5 knots and provide a pilot ladder 1 meter above the water. Deeper draft vessels may be required to anchor east of Beaufort Inlet Channel east of the previously mentioned pilot boarding position, or east of channel Buoy 6, and wait on tides before entering. (See anchorage.)

(45) Arrangements for pilot services are usually made well in advance through ship's agents or direct to the pilot office. Vessels are requested to give a 2-hour advance notice before ETA.

### Towage

(46) Tugs up to 4,000 hp are available; tugs are required for docking oceangoing vessels. Arrangements for such services are usually made well in advance through ships' agents.

### Quarantine, customs, immigration, and agricultural quarantine

(47) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(48) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) There is a county hospital in Morehead City.

(49) Beaufort-Morehead City is a **customs port of entry.**

### Coast Guard

(50) A **Marine Safety Detachment** is at the Fort Macon Coast Guard Base. (See Appendix A for address.)

### Harbor regulations

(51) The port of Morehead City is administered by the North Carolina State Ports Authority, which is represented by the Director of the North Carolina State Ports Authority Terminal. The Director's office is at the terminal. A no-wake zone is adjacent to the State Port.

### Wharves

(52) The facilities described at the port of Morehead City include the North Carolina State Ports Authority Terminal and a privately operated liquid terminal on the east side of the basin on Radio Island.

(53) The alongside depths for the facilities described are reported depths. (For information on the latest depths, contact the State Ports Authority or the private operator.) Unless otherwise indicated, the facilities mentioned are owned and/or operated by the State Ports Authority.

(54) Most of the other facilities in the port are used by fishing vessels and small craft. For a complete description of the port facilities, refer to Port Series No. 12, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(55) **Facility on Radio Island:**

(56) **Radio Island Terminal Tanker Wharf** (34°42'53"N., 76°41'29"W.): on the west side of Radio Island; 100-foot face, 650 feet with dolphins; 38 feet alongside; deck height, 12 feet; handles sulfur and liquid fertilizer.

(57) **Facilities on north side of Bogue Sound**:

(58) **North Carolina State Ports Authority Berth No. 1** (34°43'06"N., 76°41'44"W.): 350-foot south face, 80-foot east face; 40 feet alongside; deck height, 10 feet, 2 feet at ramps at west end of south face.

(59) **North Carolina State Ports Authority, Berths Nos. 2 and 3**, adjoining Berth No. 1 to the southwest; 1,000-foot face; 40 feet alongside; deck height, 10 feet; shiploader with overhead clearance of 45 feet; belt-conveyor system, loading rate 3,000 tons per hour; handles phosphoric acid and dry bulk materials including phosphate; operated by North Carolina State Ports Authority and Morehead City Exports Terminals.

(60) **North Carolina State Ports Authority Berths Nos. 4 and 5**: adjoining Berths Nos. 2 and 3 to the west; 1,281-foot face; 35 feet alongside; deck height, 10 feet; mobile cranes to 30 tons; handle general cargo, asphalt, salt, and fishmeal; various operators.

(61) **North Carolina State Ports Authority Berths Nos. 6 and 7**: adjoining Berths Nos. 4 and 5 to westward; 1,090-foot face; 35 feet alongside; deck height, 10 feet; two traveling 115-ton gantry cranes; use of mobile equipment from Berths Nos. 4 and 5; handles general cargo and dry bulk materials including lumber, steel, paper products, machinery, potash, urea, fishmeal, and heavy lift items; various operators.

(62) **North Carolina State Ports Authority Berths Nos. 8 and 9**: adjoining Berths Nos. 6 and 7 to the northward; 1,350-foot face with 100-foot roll-on/roll-off ramp at north end; 35 feet alongside; deck height, 10 feet, 8

feet at roll-on/roll-off ramp; use of gantry cranes from Berths Nos. 6 and 7 and mobile equipment from Berths Nos. 4 and 5; handles general, heavy-lift, containerized, and roll-on/roll-off cargo.

(63) A Navy staging area and three LST loading ramps are at the southern end of Radio Island. Three rows of mooring dolphins separate the loading ramps. A submerged groin extends southward along the easterly side of the easterly row of dolphins.

### Supplies

(64) Bunker C fuel oil is available by truck at North Carolina State Ports Authority. Diesel fuel is obtained by truck. Marine supplies and provisions are available in Morehead City.

### Repairs

(65) There are no drydocking or major repair facilities for deep-draft vessels in the port; the nearest facilities are at Newport News and Norfolk, VA. Several machine shops, off the waterfront, can make limited above-the-waterline repairs. The largest of these shops is equipped to perform general welding and fabricating, and produce shafts up to 20 feet in length.

(66) A boatyard about 0.55 mile west of North Carolina State Ports Authority Berths Nos. 8 and 9 has a 300-ton vertical lift. A 10-ton crane is at the yard. Hull and engine repairs can be made to small vessels.

### Small-craft facilities

(67) Most of the small-craft facilities are along the southern waterfront of Morehead City. A yacht basin is on the north side of the city, off the northwest side of the North Carolina State Ports Authority Terminal. Other small-craft facilities are at nearby Beaufort and Radio Island, and westward of the city along the Intracoastal Waterway.

(68) (See the small-craft facilities tabulation on chart 11541 for services and supplies available.) Restaurants and living accommodations are along the Morehead City waterfront.

### Communications

(69) The port is served by U.S. Route 70 and State Route 24. The city is linked to the Norfolk Southern Railway System through the Atlantic and Carolina Coastal Railway. The 3-mile Beaufort and Morehead Railroad connects the city with nearby Radio Island.

(70) **Beaufort** (pronounced BO-furt), on the eastern side of Morehead City Harbor, has considerable fishing and boatbuilding activity. It is reached from Beaufort Inlet through Beaufort Channel and from the Intracoastal Waterway through Gallants Channel. The Taylor Creek Channel is described in chapter 4.

(71) A Federal project provides for channel depths of 15 feet in **Beaufort Channel,** 12 feet in **Gallants Channel** from the Intracoastal Waterway to the first turn just north of Town Creek, thence 15 feet in the lower part of the channel to the junction with Beaufort Channel, and thence 15 feet from the junction through a 12-foot basin in front of the town of Beaufort, and thence through Taylor Creek to a point 0.2 mile westward to Lenoxville Point. The channels are subject to shoaling between dredging, and lesser depths may be found. (See Notice to Mariners and latest editions of charts for controlling depths.) The channels are well marked by lights, buoys, and daybeacons. A submerged groin extends southward between the westerly edges of Beaufort Channel and the easterly row of dolphins at the southeastern end of Radio Island.

(72) A dredged channel leads eastward from Gallants Channel to a basin at the head of **Town Creek**, north of Beaufort. In 2008, the reported depth to the basin was 12 feet.

(73) Beaufort is connected by a highway bridge across Gallants Channel to **Radio Island** and thence to Morehead City by bridges over the Intracoastal Waterway. The minimum clearance is 13 feet for the bascule bridge over Gallants Channel. (See **117.1 through 117.49 and 117.822**, chapter 2, for drawbridge regulations.) An overhead power cable close northward of the highway bridge has a clearance of 77 feet. The bridges over the Intracoastal Waterway are described in chapter 12.

### Small-craft facilities

(74) Most of the facilities are along the southwest waterfront of Beaufort. There are also facilities near the northern end of Radio Island. (See the small-craft facilities tabulation on chart 11541 for services and supplies available.) Machine shops in Beaufort can make engine repairs.

## Charts 11543, 11541

(75) **Bogue Sound** extends about 22 miles westward along the coast from Beaufort Inlet to Bogue Inlet. It is shallow and separated from the ocean by **Bogue Banks**, a wooded beach 0.1 to 1 mile wide. The sound is about 2 miles wide midway of its length, but narrow at each end; the western end has numerous marshy islets. The Intracoastal Waterway route is through the north side of the sound. The mean range of tide in Bogue Sound is about 2.5 feet near the inlets, and about a foot where the tides meet near the middle. Strong south and southwest winds may raise the tide a foot or more, and north to northwest winds lower it the same amount.

(76) **Bogue Inlet**, 22 miles west of Beaufort Inlet, is the seaward approach to the town of Swansboro, which can be seen from outside. The entrance is used almost exclusively by local fishermen. The inlet is between a high wooded ridge on the west and a long low spit on the east. On the inside of the spit, about a mile eastward of the inlet, is **Swansboro Coast Guard Station.** The entrance to the inlet, obstructed by a shifting bar extending about 0.5 mile seaward, is subject to frequent change. The

channel is marked by uncharted lighted and unlighted buoys which are frequently shifted to mark the best water. Strangers should wait for a rising tide and never attempt to enter when the bar is breaking. If local fishermen happen to be coming in, it is advisable to follow them. The channels inside the inlet are also subject to considerable change, particularly during southeast and southwest storms.

(77) The mean range of tide is 2.2 feet in the inlet; high water occurs 2 hours earlier than at the head of the marshes inside. (See the Tide Tables for daily predictions.)

(78) A fish haven, covered 15 feet, is about 4 miles southeastward of Bogue Inlet in about 34°36'42"N., 77°02'18"W.

(79) **Swansboro**, a small town on the west bank of White Oak River 3 miles north of Bogue Inlet, is reached by the shifting channel from the inlet, and from Bogue Sound and Cape Fear River through the Intracoastal Waterway. Numerous fishermen base at Swansboro. State Route 24 highway bridge over White Oak River at the town has a 30-foot fixed span with a clearance of 12 feet. The highway bridge over the easterly channel, about 0.3 mile southeastward, has a 30-foot fixed span with a clearance of 6 feet. Swansboro is described in more detail in connection with the Intracoastal Waterway, chapter 12.

(80) For 4 miles above Swansboro, **White Oak River** has a width of 1 mile or more through which there is a narrow tortuous channel between the flats and oyster rocks. Farther up, the river is narrow and deep and leads between marshes to the fixed bridge at the town of **Stella**, about 8 miles above Swansboro. The river above State Route 24 highway bridge is unmarked and has many logs and snags; navigation is limited to shallow-draft skiffs only.

(81) **Bear Inlet** and **Browns Inlet**, 3 and 6 miles westward of Bogue Inlet, respectively, are unmarked and used by local boats only; neither is recommended to strangers.

(82) The **danger zones** of firing ranges are in the ocean between Bear Inlet and New River Inlet and in New River. (See **334.440**, chapter 2, for limits and regulations.) A **Sea Turtle Sanctuary**, Marine Protected Area (MPA), extends from Bogue Inlet to New River Inlet.

## Chart 11542

(83) **New River Inlet**, 35 miles westward of Beaufort Inlet, is considered dangerous by local pilots, and entrance should not be attempted except under the most favorable conditions. A strong ebb current from the inlet causes a break on the bar when there is a sea outside. The break is especially bad when the ebb sets against a south or southeast wind.

(84) The bar channel is subject to continual change and local knowledge is advised. The inlet is marked at the entrance by a lighted whistle buoy; other buoys marking the bar channel are not charted because they are frequently shifted in position. Caution is advised when navigating the area. An unmarked fish haven is about 1.9 miles southwestward of the southern entrance point to New River Inlet.

(85) **New River** has a width of 1 to 2 miles from the head of the marshes above the inlet to within 2 miles of Jacksonville, above which it is a narrow stream. There is practically no periodic tide in the river. It has been reported, however, that the wind can vary the height of the water 3 to 4 feet at the State Route 172 highway bridge, 3 miles above the Intracoastal Waterway.

(86) A dredged channel in New River leads from the Intracoastal Waterway to a point about 0.65 mile below U.S. Route 17 highway bridge at Jacksonville. In 2011, the controlling depth was 5 feet from the Intracoastal Waterway to Light 23; thence in 2002, 5.1 feet to Light 42; thence in 1977, 5.7 feet to the head of the project at the Route 17 bridge in Jacksonville. The channel is well marked by lights and daybeacons. Spoil areas, some discontinued, extend close along the easterly side of the channel for almost its entire length.

(87) **Fulcher Landing**, used mainly by fishermen, is on the west side of New River about 1.5 miles above the Intracoastal Waterway. There are numerous piers at seafood-packing houses at the landing where gasoline, diesel fuel, water, electricity, and marine supplies may be obtained. Cabins and a restaurant are nearby. Two marine railways here can haul out boats up to 50 feet for engine and hull repairs.

(88) State Route 172 highway bridge over New River, 3 miles above the Intracoastal Waterway, has a fixed span with a clearance of 65 feet.

(89) A marina is just below the bridge on the south side of the river; berths, gasoline, pump-out, water, and limited marine supplies are available. In 2010, an approach depth of 6 feet with an alongside depth of 5 feet was reported.

(90) **Jacksonville**, on the east bank of New River about 17 miles above the Intracoastal Waterway, is a city with a county hospital. Limited amounts of marine supplies are available here. Pulpwood is shipped by rail and also by barge down the Intracoastal Waterway.

(91) There are several barge docks and a marina on the east side of the river at Jacksonville. Berthage, electricity, gasoline, diesel fuel, water, ice, marine supplies, and a launching ramp are available at the marina. A trailer can haul out craft to 28 feet for hull and engine repairs.

(92) Jacksonville has highway connections with U.S. Route 17 and State Routes 24, 53, and 258.

(93) U.S. Route 17 highway bridge over New River at Jacksonville has a 40-foot fixed span with a clearance of 15 feet. An overhead power cable with a clearance of 18 feet is just south of the U.S. Route 17 bridge. Above the U.S. Route 17 bridge, the overhead power cables have a minimum clearance of 22 feet. A highway bridge, about 200 yards below U.S. Route 17 bridge, has a 28-foot fixed span with a clearance of 13 feet. A fixed highway

bridge with a clearance of 65 feet crosses New River at the southern entrance to **Wilson Bay**, about 1.5 miles below the U.S. Route 17 highway bridge.

(94) A small-craft facility 600 yards below the U.S. Route 17 highway bridge on the west side of the river; berths, gasoline, pumpout, electricity, water, marine supplies, surfaced launching ramp, engine repairs and a 6-ton lift are available. An approach depth of 3 feet and alongside depth of 5 feet were reported in 2002.

(95) **Chaney Creek** extends eastward about 300 yards north of the U.S. Route 17 bridge. A privately marked channel leads to a marina about 0.7 mile above the mouth. Depths of 1 to 3 feet can be carried to the fixed bridges just above the marina. The fixed spans have minimum clearances of 8 feet horizontal and 6 feet vertical. The marina has berths with electricity, gasoline, water, ice, and marine supplies; hull and engine repairs can be made.

## Charts 11539, 11541

(96) **New Topsail Inlet**, 19 miles southwestward of New River Inlet, is entered through a marked channel over a shifting bar. The bar channel leads to a junction with two dredged channels inside the entrance. The buoys marking the bar channel are frequently shifted in position to mark the best water, and therefore not charted; caution is advised. The inlet should not be entered by strangers. A southwesterly or northwesterly storm totally changes the configuration of the inlet. Information on existing conditions can be had by contacting the **Wrightsville Beach Coast Guard Station**.

(97) An unmarked fish haven is about 2.2 miles eastward of the northern entrance point to New Topsail Inlet.

(98) The dredged channels inside the entrance are well marked. One channel leads northeastward through Topsail Sound for about 5.5 miles to a junction with the Intracoastal Waterway; in 2009-2011, the controlling depth was 3 feet; aids mark the best water. **Howards Channel** leads northwestward for about 1.1 miles to a junction with the Intracoastal Waterway; in 2011, the controlling depth was 2 feet. Both channels are subject to continual change, and local knowledge is advised.

(99) **Topsail Sound** extends northeastward from New Topsail Inlet along the northwesterly side of the barrier beach. There are several marinas on the southeasterly side of the sound where berthage, electricity, gasoline, water, ice, and limited amounts of marine supplies can be obtained. Hull, engine, and electronic repairs can be made; launching ramps are available.

(100) **Little (Old) Topsail Inlet**, 1.5 miles southwestward of New Topsail Inlet, is constantly changing and was reported closed in 1983. The shore on both sides is a low sand beach without distinguishing marks.

(101) **Rich Inlet**, about 4.5 miles southwestward of New Topsail Inlet, is constantly changing and was reported closed in 1983.

(102) An unmarked fish haven is about 2.7 miles southward of the southern entrance point to Rich Inlet.

(103) **Mason Inlet** is 8.5 miles southwestward of New Topsail Inlet. The inlet was restored in 2002 with 12 feet reported at the entrance, thence 10 feet to the Intracoastal Waterway. The inlet is subject to continual change and local knowledge is advised.

(104) **Wrightsville Beach** is a summer resort about 11.5 miles southwestward of New Topsail Inlet. Two tanks and many multistoried buildings on the beach and on Harbor Island are prominent from seaward. The facilities on the inside of the barrier beach are reached through Masonboro Inlet.

(105) **Wrightsville Beach Coast Guard Station** is at the southern end of Wrightsville Beach at Masonboro Inlet.

(106) **Masonboro Inlet**, about 12.5 miles southwestward of New Topsail Inlet and 22.3 miles north-northeastward of Cape Fear, is protected by jetties. A lighted whistle buoy is off the entrance.

(107) A channel leads between the jetties at Masonboro Inlet, thence northward through dredged **Banks Channel** and **Motts Channel** to a junction with the Intracoastal Waterway at Wrightsville. The buoys marking the bar channel are frequently shifted to mark the best water, and therefore not charted; caution and local knowledge are advised. Banks and Motts Channels are well marked by lights and daybeacons.

(108) Strong tide rips form on the ebb current.

(109) The municipal dock at Wrightsville Beach, just southward of U.S. Route 74-76 highway bridge, is 120 feet long with a reported depth of 4 feet alongside; water and electricity are available. Charter fishing boats use the wharf. There is bus service between Wrightsville Beach, Wrightsville, and Wilmington.

(110) Several small-craft facilities are on the north side of Motts Channel between Wrightsville Beach and **Wrightsville**. (See the small-craft facilities tabulation on chart 11541 for services and supplies available.)

(111) Other marinas along the Intracoastal Waterway at Wrightsville are discussed in chapter 12.

## Charts 11539, 11534

(112) **Carolina Beach Inlet** is about 7 miles south of Masonboro Inlet. A lighted whistle buoy marks the approach to the inlet. The inlet is marked by unlighted buoys and is used as an access to the Intracoastal Waterway. A 452-foot tower is prominent at 34°05.0'N., 77°53.1'W. in the inlet approach. The inlet is subject to continual change and should be used only with local knowledge.

(113) **Carolina Beach** is a resort about 3 miles southward of Carolina Beach Inlet and 12 miles northward of Cape Fear. A dredged channel connects the landlocked basin

at the town with Myrtle Grove Sound and the Intracoastal Waterway. In 2003, the controlling depth was 4.2 feet. Daybeacons mark the channel.

(114) Some of the more prominent landmarks that can be seen from seaward along this section of the coast are: a group of four towers centered in 34°03.8'N., 77°54.8'W., about 2 miles north-northwestward of Carolina Beach; a water tank at Carolina Beach; a tank and radar domes at **Kure Beach**, 3.8 miles and 5 miles southward of the towers, respectively; and the stack, microwave tower, and buildings of the nuclear powerplant on the west side of the Cape Fear River, 7.4 miles southwestward of the towers.

(115) **New Inlet**, about 17.5 miles south of Masonboro Inlet and 4.7 miles north-northeast of Cape Fear, is constantly changing and was reported closed in 1983.

## Chart 11536

(116) **Cape Fear** is a low, sharp, sandy point 85 miles southwestward of Cape Lookout at the southern extremity of **Smith Island**. This island, on the eastern side of the entrance of Cape Fear River, is mostly low and marshy, but on the western side has a thick growth of trees and a 99-foot-high octagonal tower of an abandoned light. A marina near the abandoned light has berths with electricity, gasoline, diesel fuel, a pump-out station, and marine supplies. In 2006, an approach and alongside depth of 7.5 feet was reported.

(117) **Frying Pan Shoals**, extending south-southeastward from Cape Fear, are bare in spots near the shore and have general depths of 2 to 12 feet in an unbroken line to a point 10 miles from the cape; for 6 miles farther the shoals are broken with depths ranging from 10 to 20 feet. A natural channel, known as **Frying Pan Shoals Slue**, cuts through the shoals about 11.5 miles southward of Cape Fear. The slue is marked at the northeastern approach by a lighted whistle buoy, about midway of its length by two buoys, and at its southwestern approach by a lighted buoy. A depth of about 20 feet can be carried through the channel with the aid of the chart. The channel is used by fishing boats and other small craft.

## Chart 11537

(118) **Cape Fear River**, 370 miles long and the approach to the city of Wilmington, empties into the sea immediately westward of Cape Fear. Barge traffic is active as far as **Fayetteville**, about 125 miles above the mouth.

(119) **Wilmington**, 24 miles above the mouth, on the east bank of Cape Fear River, is the leading port of North Carolina. It is 363 miles south of Norfolk, VA, and 315 miles north of Jacksonville, FL, by coastwise routes. Exports are tobacco, woodpulp, bulk cement, fabricated metal products, and scrap metal. Imports are petroleum products, fertilizers, ferrous and non-ferrous ores, lumber, paper, salt, sulfur, textiles, iron and steel products, fabricated metal products, and bulk chemicals. There are many tourist attractions and points of historical interest in the city and vicinity, including the USS NORTH CAROLINA, a World War II memorial, which is berthed on the west bank of Cape Fear River opposite Wilmington.

### Prominent features

(120) **Oak Island Light** (33°53'34"N., 78°02'06"W.), 169 feet above the water, is shown from a 155-foot cylindrical tower, upper part black, middle white, and lower part gray, on Oak Island on the western side of Cape Fear River entrance. It is the most conspicuous object in the approach. The abandoned lighthouse, known as "Old Baldy", on the west side of Smith Island, and the buildings of the **Oak Island Coast Guard Station**, westward of Fort Caswell, are also conspicuous.

(121) Water tanks at Yaupon Beach, Southport and at Kure Beach and two silver radar domes about 1.3 miles southward of the tank at Kure Beach are visible well to seaward. The floodlights at the buildings on the beach about 1 mile westward of Oak Island Light are reported to be highly visible at night. The lights on the stack, microwave tower, and on the buildings of the nuclear powerplant, on the west side of Cape Fear River 2.5 miles above Southport, are prominent at night.

(122) Frying Pan Shoals platform tower (33°29'06"N., 77°35'24"W.) is reported to be a good radar target in the approach to Cape Fear River. It is also reported that under ideal conditions the configuration of Cape Fear and Oak Island Light prove of some value as radar targets when closer in; these targets, however, should not be relied upon too strongly.

### COLREGS Demarcation Lines

(123) The lines established for Cape Fear River are described in **80.530**, chapter 2.

### Channels

(124) A Federal project provides for a channel 40 feet deep over the ocean bar, thence 38 feet for 24 miles to Wilmington including the turning basin off the southerly part of the city; thence in Northeast Cape Fear River 32 feet to and including a turning basin 0.4 mile above the mouth, thence 32 feet to Hilton Bridge about 1.2 miles above the mouth, and thence 25 feet to the upstream limit of the Federal project about 1.5 miles above the bridge, including a turning basin about 1 mile above the bridge. (See Notice to Mariners and latest editions of charts for controlling depths.) The channel is well marked with lighted ranges and other aids.

(125) **Western Bar Channel,** close to **Fort Caswell** on the western side of the entrance to Cape Fear River, is used considerably by small craft bound westward along the coast. This unmarked channel had a reported depth of 8 feet in 1983, and the best water was about 50 yards offshore. The channel is not stable, and local knowledge

is advised for boats drawing over 6 feet. Abreast **Oak Island Coast Guard Station**, the shore should not be approached closer than 0.3 miles. A dredged channel from Cape Fear River to the Coast Guard wharf had a reported midchannel controlling depth of 4½ feet in 1998. The channel is marked by daybeacons and lights.

(126) A ferry, operated by the NC State Highway Commission, crosses the river from Price Creek about 4.5 miles above the mouth to Federal Point on the east side of the river about 3 miles south-southwest of **Kure Beach.** The channels leading to the ferry terminals are marked by pilings with reflectors and are maintained by the Highway Commission. In 1991, Price Creek ferry channel had a reported controlling depth of 10 feet. In 1985, Federal Point ferry channel had a reported controlling depth of 7 feet.

(127) An overhead power cable with a clearance of 165 feet over the main channel crosses Cape Fear River about 18.8 miles above the mouth.

(128) U.S. Route 74/76 highway lift bridge with a clearance of 65 feet down and 135 feet up crosses Cape Fear River at Wilmington, about 23.5 miles above the mouth. The bridgetender monitors VHF-FM channel 16 and works on channels 13 and 18; telephone 910-251-5773. (See 117.1 through 117.49, chapter 2, for drawbridge regulations.) Bridges crossing Cape Fear River above Wilmington are discussed later in this chapter.

### Anchorages

(129) Fair anchorage is available in the Cape Fear River abreast the town of Southport. The holding ground is good, but because of strong tidal currents vessels should anchor with a good scope of chain. This anchorage is sometimes used as a harbor of refuge in the winter by coasting vessels.

(130) Vessels awaiting entrance to the river may find good holding ground in about 7 fathoms within 0.6 mile southeastward of the sea buoy (Cape Fear River Entrance Lighted Whistle Buoy CF). The area to the northwestward of the sea buoy is reported to be rocky and foul, and some vessels have lost anchors or broken flukes in the area.

### Dangers

(131) Frying Pan Shoals are the principal danger in the approaches to Cape Fear River. Isolated wrecks, some marked, and obstructions with varying depths over them are in the approaches.

(132) In 2007, a rock was reported with shoaling to 28 feet at 33°42'38"N., 78°02'08"W.

(133) **Bald Head Shoal** and **Jay Bird Shoals (Middle Ground)** are dangerous shoals on either side of the bar channel.

(134) **Caution** should be exercised in Cape Fear River at times when tides are higher than normal and after heavy rains as logs and floating debris may be encountered.

(135) A **restricted area** of the Sunny Point Army Terminal is 9 miles above the mouth of Cape Fear River. (See **334.450**, chapter 2, for limits and regulations.)

### Routes

(136) On the approach to Cape Fear River from northward, the safer course, and the one generally used by deep-draft vessels, is outside of Frying Pan Shoals Lighted Buoy 16.

(137) From southward, deep-draft vessels should set a course to pass outside the broken ground extending offshore between Cape Romain and Winyah Bay. When clear of this broken ground, the course can be shaped for Cape Fear River Entrance Lighted Whistle Buoy CF. When approaching from southward an overrun of as much as 0.5 knot may be expected except during northeasterly winds.

### Traffic Separation Scheme

(138) **Traffic Separation Scheme (Approaches to Cape Fear River)** has been established for the control of maritime traffic and aid in the prevention of collisions, but is not intended in any way to supersede or alter the applicable Navigation Rules. (See **33 CFR 167.1 through 167.15 and 167.250 through 167.252,** chapter 2, for limits and regulations and Traffic Separation Schemes, chapter 1, for additional information.)

(139) The scheme provides for inbound-outbound traffic lanes to enter or depart the Cape Fear River. (See chart 11536).

(140) (1) 33°45'56"N., 78°04'48"W.

(141) (2) 33°32'45"N., 78°09'39"W.

(142) (3) 33°34'30"N., 78°14'42"W.

(143) (4) 33°45'06"N., 78°04'58"W.

(144) Northbound traffic:

(145) (5) 33°32'45"N., 78°05'59"W.

(146) (6) 33°44'22"N., 78°03'46"W.

(147) Southbound traffic:

(148) (7) 33°36'13"N., 78°18'00'W.

(149) (8) 33°46'02"N., 78°05'24"W.

(150) A **precautionary area** is established close northeast of the traffic separation scheme:

(151) (1) 33°47'38"N., 78°04'46"W.

(152) (2) 33°48'30"N., 78°04'16"W.

(153) (3) 33°49'31"N., 78°03'06"W.

(154) (4) 33°48'00"N., 78°01'00"W.

(155) (5) 33°41'00"N., 78°01'00"W.

(156) (6) 33°41'00"N., 78°04'00"W.

(157) (7) 33°44'16"N., 78°03'01"W.; thence by an arc of a 2 mile radius centered on Cape Fear River Entrance Lighted Whistle Buoy CF (33°46'17"N., 78°03'02"W.). A racon is at the buoy. A pilot boarding area is inside the precautionary area. Due to heavy traffic, mariners are advised not to anchor or linger in the precautionary area except to pick up or disembark a pilot.

### Currents

(158) The tidal currents on the bar run with considerable velocity and as a rule set nearly in the direction of the channels, but on the last of the flood and first of the ebb they set to the eastward across the channel and on the beginning of the flood they set to the westward. In the river their set is generally in the direction of the channel. The relative velocities of flood and ebb depend upon the stage of the river. During freshets the flood at times is completely overcome by the river current and the ebb is greatly increased. At low-river stages, a strong flood is felt for a considerable distance above Wilmington, where it runs 5½ hours to nearly 7 hours of ebb; downriver from Wilmington, the periods of flood and ebb become more nearly equal. Current predictions for a number of locations in Cape Fear River may be obtained from the Tidal Current Tables.

(159) **Weather, Wilmington and vicinity**. A maritime location makes Wilmington's climate unusually mild for its latitude. Warm, humid summers are tempered by sea breezes while cold, winter outbreaks are moderated by winds off a relatively warm ocean. The average temperature in Wilmington is 64°F (17.8°C). The average high is 74°F (23.3°C) and the average low is 53°F (11.7°C). July is the warmest month with an average high of 90°F (32.2°C) and an average low of 72°F (22.2°C). January is the coolest month with an average high of 56°F (13.3°C) and an average low of 36°F (2.2°C). The warmest temperature on record is 104°F (40°C) recorded in June 1952 while the coldest temperature on record is 0°F (-17.8°C) recorded on Christmas morning, 1989. Each month, June, July, and August, has had maximum temperatures in excess of 100°F (37.8°C) and each month, October through April, has recorded temperatures below freezing. During any given year, 46 days will have maximums above 90°F (32.2°C) while 42 days will have minimums below 32°F (0°C).

(160) Sea fog is likely from November through April with southerly or southeasterly winds. It may hang on for several days until a west wind brings clearing. After a warm day with a large nighttime drop in temperature, fog may settle on the river, but will usually burn off in the forenoon. It may be thick on the bar and outside, while clear on the river from 2 or 3 miles (3.2 to 4.8 km) above the entrance. Rainy days are common throughout the year with a slight maximum in summer. However, summer precipitation is often in the form of a brief, heavy shower or thunderstorm in the late afternoon. Average annual precipitation in Wilmington is 55 inches (1,397 mm) and precipitation falls an average 153 days each year. July is the wettest month averaging nearly 8 inches (203.2 mm), mostly from thunderstorms. April is the driest month averaging under 3 inches (76.2 mm). Average annual snowfall is less than 2 inches (51 mm) but snow has fallen in each month, November through April. The greatest snowfall during any 24-hour period occurred in December 1989 when nearly 10 inches (254 mm) fell.

(161) Since 1842, 66 tropical storms have come within 50 miles (93 km) of Wilmington, North Carolina, 26 of these storms since 1950. The most noteworthy in recent time was Hurricane Bonnie which made landfall at Cape Fear with 115-knot maximum winds early in the afternoon of August 26th 1998. The storm center shifted northeastward up the coastline and finally moved inland over neighboring Pender and Onslow Counties. Due to the slow forward speed (less than 10 knots most of the time), rainfall amounts were staggering and isolated reports in excess of 20 inches (508 mm) were noted. Wind damage inland was minimal but coastal damage from Surf City to Cape Lookout was major due to a combination of the storm's slow forward speed and the occurrence of two abnormally high tides. Bonnie took almost the same path as Hurricane Bertha had taken only two years prior. Hurricane Bertha made landfall northeast of Wilmington in Pender County with 90-knot winds on July 12th, 1996. Six weeks later, Hurricane Fran made landfall at Cape Fear on September 2nd packing 100-knot winds. (See Appendix B for the **Wilmington climatological table**.)

(162) **Freshets** occur any time from November through April, but no appreciable rise in the water level has been reported at Wilmington. They do have a marked effect on the tidal currents and sometimes overcome the flood current entirely in the river almost to the entrance. The velocity of the ebb current is greatly increased during freshets.

### Pilotage, Wilmington

(163) Pilotage is compulsory from the bar to the limit of navigation on the Cape Fear River (which is above Wilmington), for all foreign vessels and U.S. vessels under register in the foreign trade. Pilotage is optional for U.S. coastwise vessels which have on board a pilot licensed by the Federal Government. Pilotage is available from the Wilmington Cape Fear Pilots Association, P.O. Box 10070, Southport, NC 28461, telephone 910-457-6909 (Southport) or 910-457-6916 (Wilmington), FAX 910-457-9291, cable address CAPFRPILOT. The Association maintains three pilot boats, CAPE FEAR PILOT, 44 feet long, CAPE FEAR PILOT III, 50 feet long, and CAPE FEAR PILOT IV, 31 feet long; each boat has a dark hull and white house with the word “PILOT” on the sides. Southport Federal Pilots, telephone 910-520-1601, offers pilotage service on the Cape Fear River for the Port of Wilmington, NC to United States coastwise (enrolled and licensed), public, and foreign government vessels. Pilots board vessels day or night about 1 mile seaward of Cape Fear River Entrance Lighted Whistle Buoy CF (33°46'17"N., 78°03'02"W.); the buoy is equipped with a racon. Vessels drawing more than 34 feet are taken in on a rising tide; boarding times may be obtained through the pilots or the vessels agents. Vessels should maintain a speed of about 6 to 8 knots and provide a pilot ladder 1 meter above the water. The pilots monitor VHF-FM channels 16 and 18A and use channels 18A and 12 for

working. Arrangements for pilots can be made through ships' agents or direct to the Association. Use telephone or FAX or cable address (above) or VHF-FM channels 16 or 18A, or via the marine operator on channel 26. At least 2 hours advance notice of arrival is requested.

### Towage

(164) Vessels seldom find it necessary to employ tugs between the sea buoy and the turning basin off the southerly part of Wilmington, but tugs are generally used to assist in docking and movement within the port or to upriver facilities. Inbound vessels are usually met by the tugs just below the terminal they are bound for or off the State Ports Authority Terminal wharf. Tugs up to 3,800 hp are available.

### Quarantine, customs, immigration, and agricultural quarantine

(165) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(166) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) A county hospital is at Wilmington.

(167) Wilmington is a **customs port of entry.**

### Coast Guard

(168) A **Sector Office** is in Wilmington. (See Appendix A for address.)

### Harbor Regulations

(169) There are no formal harbor regulations at Wilmington or Southport. The State Ports Authority Terminal in Wilmington is administered by the North Carolina State Ports Authority. The Operations Manager maintains an office at the State Ports Authority Terminal.

### Wharves

(170) Only the major port facilities at Wilmington are described. These include North Carolina State Ports Authority Terminal wharf, the port's only general cargo facility, several oil terminals, and bulk-handling facilities for cement, asphalt products, molasses, liquid chemicals, sulfur, fertilizers, and liquid sugar. Most of the piers and wharves have railroad and highway connections, and water and electricity. Cargo is generally handled by ship's tackle; special handling equipment, if available, is mentioned in the description of the particular facility. The alongside depths given for each facility described are reported depths. (For information on the latest depths, contact the operator.) There are many smaller facilities at Wilmington which are used by barges and small vessels, as vessel repair berths, and for scrapping operations; these facilities are not described. For a complete description of the port facilities, refer to Port Series No. 12, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(171) **East side of Cape Fear River:**

(172) **Gold Bond Building Products Wharf** (34°10'25"N., 77°57'27"W.): 30-foot face, 810 feet of berthing space with anchors; 35 feet alongside; deck height, 11 feet; electric conveyor, unloading rate 1,000 tons per hour; handles gypsum.

(173) **Exxon Co. USA Wharf** (34°10'35"N., 77°57'26"W.): 82-foot T-head pier, 836 feet with dolphins; 40 feet alongside; deck height, 13 feet; handles petroleum products and bunkering vessels; owned and operated by Exxon Co. USA.

(174) **Mobile Oil Corp. Wharf**: about 0.35 mile north of Exxon Co. USA Wharf; 40-foot T-head pier, 240 feet with dolphins; 34 feet alongside; deck height, 11 feet; handles petroleum products and asphalt; owned and operated by Mobil Oil Corp. and American Oil Corp.

(175) **Petroleum Fuel and Terminal Co. Wharf**: about 0.3 mile northward of Mobil Oil Corp. Wharf; 120-foot T-head pier, 800 feet with mooring dolphins, 32 feet alongside; deck height, 10 feet; handles petroleum products and petrochemicals; bunkering vessels; owned and operated by Petroleum Fuel and Terminal Co., and Carolina Power and Light Co.

(176) **North Carolina State Ports Authority Fuel Wharf**: about 0.25 mile northward of Petroleum Fuel and Terminal Co. Wharf; 122-foot T-head pier, 350 feet with dolphins; 34 feet alongside; deck height, 16 feet; handles petroleum products and petrochemicals; operated by Koch Fuels, Inc.

(177) **North Carolina State Ports Authority**: Berths 6, 7, and 8 (34°11'38"N., 77°57'20"W.): 1,640-foot face; 38 feet alongside; deck height, 12 feet; four 40-ton container cranes; traveling, revolving gantry cranes to 225 tons; 140-ton mobile crane; handles general and containerized cargo, heavy-lift items, and various dry bulk commodities.

(178) **North Carolina State Ports Authority**: Berths 1, 2, 3, 4, and 5: 2,900-foot face; 38 feet alongside; deck height, 12 feet; use of cargo handling equipment from Berths 6, 7, and 8; handles general and containerized cargo, heavy-lift items, and various dry bulk commodities; operated by North Carolina State Ports Authority and Cargill, Inc.

(179) **North Carolina State Ports Authority**: Berths A and B; adjoining Berths 1, 2, 3, 4, and 5 to northward; 1,213-foot face; 38 feet alongside; deck height, 12 feet; use of cargo handling equipment from Berths 6, 7, and 8; general and containerized cargo, heavy-lift items, and various dry bulk commodities.

(180) **Paktank Corp. Wharf**: 0.1 mile northward of the northern end of States Ports Authority Berths A and B; 70-foot T-head pier, 1,010 feet with mooring dolphins; 38 feet alongside; deck height, 12 feet; handles liquid chemicals.

(181) **Chevron U.S.A. Wharf**: about 0.25 mile northward of the northern end of State Ports Authority Berths A and B; 35-foot T-head pier, 240 feet with dolphins; 24 feet alongside; deck height, 10 feet; handles asphalt.

(182) **Amerada Hess Corp. Wharf**: about 0.6 mile northward of the northern end of State Ports Authority Berths A and B; 60-foot T-head pier, 550 feet with mooring dolphins; 34 feet alongside; deck height, 8 feet; handles petroleum products.

(183) **Cape Fear Terminal Wharf**: about 0.85 mile northward of the northern end of State Ports Authority Berths A and B; three T-head piers, 30, 151, and 60 feet long, 620 feet total with dolphins; 34 feet alongside; deck height, 10 feet; handles petroleum products and petrochemicals; various operators.

(184) **Cape Fear Community College Wharf** (34°14'23"N., 77°57'09"W.): 287-foot face, 322 feet usable with dolphin; 20 feet alongside; deck height, 10 feet; mooring of the college's training vessels.

(185) **East side of Northeast Cape Fear River**:

(186) **Seaboard System Railroad Co. Diesel Fuel Wharf** (34°14'30"N., 77°57'10"W.): at the mouth of the river; 198-foot face, 450 feet with mooring dolphins; 28 feet alongside; deck height, 11 feet; handles diesel fuel and liquid fertilizer; operated by Seaboard System Railroad and Trans Carolina Terminal Corp.

(187) **Almont Shipping Co., North Berth**: about 0.25 mile north of Seaboard System Railroad Co. Diesel Fuel Wharf; 523-foot face, 600 feet with dolphins; 35 feet alongside; deck height, 10 feet; traveling gantry crane with clamshell bucket, electric belt conveyor, unloading rate 450 tons per hour; handles fertilizer, iron and chrome ores.

(188) **West side of Northeast Cape Fear River**:

(189) **Horton Iron and Metal Co. Pier**: about 1.6 miles above Point Peter (34°14'27"N., 77°57'20"W.); 235-foot face, 27 feet alongside; north and south sides 750 feet long with 400 feet of berthing space, 27 feet alongside; deck height, 10 feet; cranes to 50 tons; handles scrap metal.

(190) **W.R. Grace and Co. Wharf**: about 2.3 miles above Point Peter; 45-foot T-head pier, 790 feet with mooring dolphins; 25 feet alongside; deck height, 12 feet; handles anhydrous ammonia and liquid fertilizer

(191) **West side of Cape Fear River below Wilmington**:

(192) **Pfizer Inc. Pier**: 5.7 miles above the mouth of Cape Fear River, and about 400 yards above the Southport ferry slip; 200-foot face, 670 feet with dolphins; 35 feet alongside; handles petroleum products and other liquid cargo.

(193) **Military Ocean Terminal** (Wharf No. 1, No. 2, and No. 3): at Sunny Point, about 9 miles above the mouth; three identical 2,000-foot long wharves, about 0.4 miles apart; 20 to 34 feet alongside; deck heights, 16 feet; open storage areas; cranes up to 40 tons; truck unloading and railroad trackage at each wharf; highway connections; terminal railroad connects with Seaboard System Railroad; handles military supplies.

### Supplies

(194) All manner of marine supplies and provisions are obtainable at Wilmington. Potable water is available at most of the berths. Bunker C oil is available to ocean-going vessels at Exxon Company U.S.A. Wharf, Petroleum Fuel and Terminal Co. Wharf, Amerada Hess Corp. Wharf, and by barge. Diesel oil is available by truck.

### Repairs

(195) There are several machine shops at Wilmington, on and off the waterfront, that can fabricate shafts, perform welding, and repair shafts and propellers. The largest propeller that can be repaired is 8 feet in diameter; the largest shaft that can be produced is 36 inches by 21 feet.

### Small-craft facilities

(196) Berths and other facilities for small craft are limited at Wilmington due to the heavy commercial traffic. Extensive small-craft facilities are at Southport, which is mentioned later in the chapter. Municipal ramps are eastward of the channel just north of U.S. Route 74/76 highway lift bridge.

### Communications

(197) Wilmington is served by U.S. Routes 17, 117, 74–76, 421, and State Routes 132 and 133, and has railroad connections with a Class II railroad. A commercial airline serves the local airport.

(198) **Southport**, on the west bank of Cape Fear River 3 miles above the mouth, is a town where marine supplies can be obtained. Along its waterfront there are several fish wharves, service wharves, a yacht basin, and a small-boat harbor, as well as restaurants and motels. Berthage with electricity, gasoline, diesel fuel, water, ice, a pump-out station and marine supplies are available at these facilities.

(199) The Wilmington Cape Fear Pilots Association maintains an office and a lookout tower (33°55.0'N., 78°01.2'W.) adjacent to the town pier, which had 18 feet reported alongside in 1983. A yacht basin is on the north side of the Intracoastal Waterway about 0.2 mile westward of the lookout tower. In 2010, the controlling depth was 5.8 feet in the basin, except for depths of 2 feet near the pier at the head. The small-boat harbor, 0.45 mile westward of the lookout tower, has lifts to 75 tons for hull, engine, and electrical repairs. In 2008, depths of 3 to 6 feet were in the small-boat harbor with lesser depths in the east part and along the edges. A storm barrier on the south bank of the Intracoastal Waterway protects the harbor.

(200) From Southport the Intracoastal Waterway leads northward and follows the main ship channel in Cape Fear River to a point about 11.5 miles above the mouth of the river where it leaves the main ship channel and leads northeasterly to the west end of a landcut, known as **Snows Cut**, thence through the landcut to Myrtle Grove Sound.

(201) A dredged channel in Cape Fear River above Wilmington leads northwesterly for 3.5 miles to a turning basin at **Navassa**, thence to **Fayetteville**, the head of navigation, 100 miles above Wilmington. Three locks

and dams are between Navassa and Fayetteville. A copy of the operating schedule for the locks is available from the U.S. Army Corps of Engineers, Wilmington District. (See Appendix A for address.) In 1975, the midchannel controlling depths were 11 feet to the turning basin at Navassa with 10 feet in the turning basin, thence in 1976, 9 feet to **Acme** about 26 miles above the confluence of Cape Fear and Northeast Cape Fear Rivers, thence in 1977, 4 feet to Fayetteville. The locks have a usable length of 200 feet, a width of 40 feet, and a depth over miter sills of 9 feet.

(202) U.S. Route 421 highway bridge over Cape Fear River opposite Wilmington has a fixed span with a clearance of 55 feet. An overhead power cable 0.25 mile above the Route 421 bridge has a clearance of 125 feet. The railroad bridge at Navassa has a bascule span with a clearance of 6 feet. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) The least known high water clearance of the fixed bridges crossing Cape Fear River between Navassa and Fayetteville is 13 feet.

(203) **Black River** flows into Cape Fear River about 12 miles above Wilmington. It has been reported that drafts of not more than 3 feet can be taken to **Still Bluff**, about 10.4 miles above the mouth.

(204) **Northeast Cape Fear River** empties into Cape Fear River from northward at Point Peter (34°14'27"N., 77°57'20"W.), near the northern end of Wilmington. Above the turning basin, about 2 miles above the mouth, it is reported that natural depths of 6 feet can be taken for 42 miles, and thence 3 feet for 7 miles to **Crooms Bridge**. Traffic on the river is mainly in petroleum products.

(205) U.S. Route 117 highway bridge over Northeast Cape Fear River 0.6 mile above its mouth has a bascule span with a clearance of 40 feet. VHF-FM channels 16 and 13 are monitored at the bridge. The Hilton railroad bridge, about 1 mile above the mouth, has bascule span with a clearance of 4 feet. State Route 117 highway bridge at **Castle Hayne**, about 23.4 miles above the mouth, has a fixed span with a clearance of 23 feet at low water stage. The railroad bridge just above it has a swing span with a clearance of 7 feet at low water stage. (See **117.1 through 117.59 and 117.829**, chapter 2, for drawbridge regulations.) The twin fixed spans of the Interstate Route 40 bridge, close above the railroad bridge, have a clearance of 28 feet.

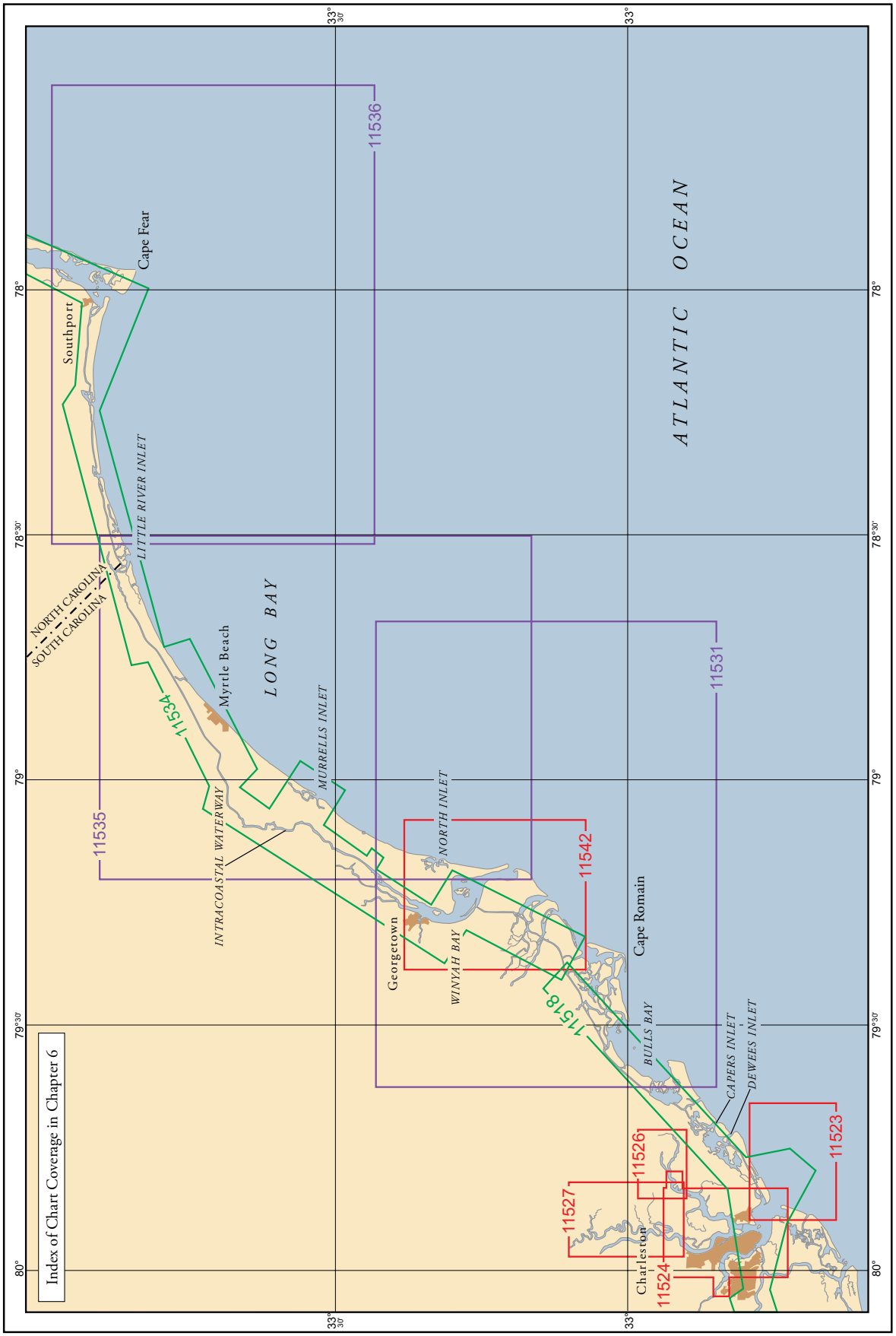
(206) **Smith Creek** empties into Northeast Cape Fear River from eastward about 1.5 miles above the river mouth. In 1983, the reported controlling depth was 5 feet over the bar to the junction with Burnt Mill Creek, thence 1 foot to the walkway crossing the creek at the airport. The creek was foul with stumps, logs, and submerged piling from the entrance to its head. U.S. Route 117 highway bridge, 1.3 miles above the mouth, has a swing span with a channel width of 45 feet and a clearance of 3 feet. (See **117.1 through 117.59 and 117.841**, chapter 2, for drawbridge regulations.) The Seaboard System Railroad (SCL) bridge, about 2 miles above the mouth, has a fixed span with a clearance of 12 feet. An overhead power cable just above the bridge has a clearance of 30 feet.

### Freshets

(207) Low-water stages prevail in the rivers above Wilmington from 2 to 4 months during the summer, and freshets usually occur as often as once a month during the remainder of the year, but with no regularity.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11545 | Cape Lookout Bight | 34°37'N/76°32'W | 4.6 | 4.2 | 0.2 |
| 11545 | Core Creek Bridge, Morehead City | 34°50'N/76°42'W | 2.3 | 2.2 | 0.1 |
| 11545 | North River Bridge | 34°47'N/76°36'W | 2.0 | 1.9 | 0.1 |
| 11547 | Beaufort, Duke Marine Lab | 34°43'N/76°40'W | 3.5 | 3.2 | 0.1 |
| 11547 | Morehead City, Port Terminal | 34°43'N/76°42'W | 3.6 | 3.3 | 0.1 |
| 11545 | Harkers Island Bridge | 34°43'N/76°35'W | 1.8 | 1.6 | 0.1 |
| 11547 | Atlantic Beach, Tripple S Pier | 34°42'N/76°43'W | 4.2 | 3.8 | 0.1 |
| 11541 | Bogue Inlet | 34°39'N/77°06'W | 2.5 | 2.3 | 0.1 |
| 11541 | New River Inlet | 34°32'N/77°20'W | 3.4 | 3.1 | 0.1 |
| 11541 | New Topsail Inlet | 34°22'N/77°38'W | 3.4 | 3.1 | 0.1 |
| 11541 | Wrightsville Beach | 34°13'N/77°47'W | 4.3 | 4.0 | 0.1 |
| 11541 | Spooner Creek | 34°44'N/76°48'W | 1.4 | 1.3 | 0.1 |
| 11541 | Atlantic Beach Bridge | 34°43'N/76°44'W | 2.7 | 2.5 | 0.1 |
| 11541 | Coral Bay, Atlantic Beach | 34°42'N/76°46'W | 1.8 | 1.7 | 0.1 |
| 11541 | Fort Macon, USCG Station | 34°42'N/76°41'W | 3.5 | 3.3 | 0.1 |
| 11541 | Triple S Marina, Bouge Sound | 34°42'N/76°43'W | 3.2 | 2.9 | 0.1 |
| 11541 | Newport River, Morehead-Beaufort Yacht Club | 34°46'N/76°40'W | 3.5 | 3.2 | 0.1 |
| 11541 | Morehead City Harbor, Harbor Channel | 34°43'N/76°44'W | 3.5 | 3.2 | 0.1 |
| 11541 | Beaufort, Taylor Creek | 34°43'N/76°39'W | 3.2 | 3.0 | 0.1 |
| 11541 | Ocean City Beach (fishing pier) | 34°27'N/77°30'W | 4.7 | 4.3 | 0.2 |
| 11539 | Cape Fear | 33°51'N/77°58'W | 5.0 | 4.7 | 0.2 |
| 11534 | Cape Romain | 33°01'N/79°21'W | 5.2 | 4.9 | 0.2 |
| 11534 | Orton Point, Cape Fear River | 34°03'N/77°56'W | 4.6 | 4.3 | 0.1 |
| 11537 | Southport, Cape Fear River | 33°55'N/78°01'W | 4.7 | 4.4 | 0.1 |
| 11534 | Myrtle Beach Airport, ICWW | 33°49'N/78°43'W | 3.3 | 3.0 | 0.2 |
| 11534 | Socastee Bridge, ICWW | 33°42'N/79°00'W | 2.4 | 2.2 | 0.1 |
| 11534 | Myrtle Beach, Springmaid Pier | 33°39'N/78°55'W | 5.6 | 5.2 | 0.2 |
| 11534 | Oaks Creek, 0.5 mi. above ent., Murrells Inlet | 33°32'N/79°03'W | 4.8 | 4.5 | 0.2 |
| 11534 | Georgetown Lighthouse, Winyah Bay | 33°13'N/79°11"W | 4.4 | 4.1 | 0.2 |
| 11534 | Sunset Beach Pier | 33°52'N/78°30'W | 5.4 | 5.0 | 0.2 |
| 11536 | Lockwoods Folly Inlet, Cape Fear River | 33°55'N/78°14'W | 4.7 | 4.4 | 0.2 |
| 11536 | Shallotte Inlet (Bowen Pt.) | 33°55'N/78°22'W | 5.1 | 4.8 | 0.2 |
| 11537 | Bald Head, Cape Fear River | 33°53'N/78°00'W | 5.0 | 4.7 | 0.2 |
| 11537 | Reaves Point, Cape Fear River | 34°00'N/77°57"W | 4.6 | 4.2 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011


Index of Chart Coverage in Chapter 6
ATLANTIC OCEAN
LONG BAY
Cape Fear
Southport
LITTLE RIVER INLET
NORTH CAROLINA
SOUTH CAROLINA
Myrtle Beach
MURRELLS INLET
INTRACOASTAL WATERWAY
NORTH INLET
Georgetown
WINYAH BAY
Cape Romain
BULLS BAY
CAPERS INLET
DEWEES INLET
Charleston
11534
11535
11536
11531
11542
11518
11527
11526
11524
11523
33° 30'
33°
78°
78°30'
79°
79°30'
80°

# Cape Fear to Charleston Harbor

(1) This chapter describes the coast of North and South Carolina from Cape Fear to Charleston Harbor.

(2) Also discussed are the deepwater ports of Charleston and Georgetown, SC; several smaller ports of which Wando and Mount Pleasant are the more important; Winyah Bay and its tributary rivers; the waters of Ashley, Wando, and Cooper Rivers and their tributaries; several of the minor rivers; and the shallow inlets which make into this section of the coast, including Shallotte, Little River, Dewees, North, Price, and Capers.

(3) The section of the Intracoastal Waterway from Cape Fear River to Charleston Harbor is described in chapter 12.

(4) There are numerous wrecks along this section of the coast; the most dangerous are marked.

### COLREGS Demarcation Lines

(5) The lines established for this part of the coast are described in **80.530 through 80.710**, chapter 2.

### Weather

(6) This stretch of coast lies close to one of the main winter storm tracks while tropical cyclones are infrequent but dangerous visitors. Along with rough seas, fog can be a problem in winter.

(7) During December, January and February, extratropical cyclones from the Gulf of Mexico often move across northern Florida and then northeastward, just off the South Carolina coast on their way to Cape Hatteras. While these storms, and frontal systems from more northerly storms, produce gale force winds that occur less than 5 percent of the time, wave heights of 8 feet (&gt_1;2 m) or more occur 20 to 30 percent of the time and wave heights of 25 feet (7.6 m) have been recorded. Weather conditions can also get rough in April when warm air from the Gulf of Mexico collides with cold arctic air.

(8) Occasionally warm tropical air blows across the cooler waters that lie shoreward of the Gulf Stream in this area. Visibilities below 0.5 mile (0.9 km) are reported about 1 to 3 percent of the time in winter, compared to less than 1 percent farther out. These poor visibilities are most likely from December through March.

(9) Tropical cyclones are most likely along this coast from June through October. Although a few have occurred in May, November and December, the peak threat is in September and October. On the average about one or two storms threaten this coast each year. Many of these tropical cyclones have recurved and are heading northward or northeastward at about 15 to 18 knots. Hurricane force winds are most likely when the storm is over open water.

### North Atlantic Right Whales

(10) Endangered North Atlantic right whales often occur within 30 miles of the North Carolina and South Carolina coasts from November through April. (See **North Atlantic right whales**, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.)

(11) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in a continuous 20-nm Seasonal Management Area between November 1 and April 30. The area is defined as the waters contained by the following points:

(12) A: 34°10.5'N., 77°49.2'W.;

(13) B: 33°56.7'N., 77°31.5'W.;

(14) C: 33°36.5'N., 77°47.1'W.;

(15) D: 33°28.4'N., 78°32.5'W.;

(16) E: 32°59.1'N., 78°50.3'W.;

(17) F: 31°50.0'N., 80°33.2'W.;

(18) G: 31°27.0'N., 80°51.6'W.; thence due west to the shore. (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.).

## Chart 11520

(19) From Cape Fear the coast curves gradually westward and southward for 80 miles to Winyah Bay Entrance. This section of the coast is a sand beach, with numerous sand dunes, separated from the heavily wooded mainland by small streams and marshes. From offshore, the woods appear to extend to the outer beach. The coast is clear, and a depth of 3 fathoms can be taken to within a mile of the beach, except at Murrells Inlet where, about 2 miles offshore, there is a 16-foot spot. The 10-fathom curve is from 11 to 25 miles offshore, and inside it the water shoals gradually as the shore is approached.

(20) The character of the coast changes from Winyah Bay to Charleston Harbor. Here the coastline trends southwestward for about 45 miles and is a border of sandy barrier islands with off-lying shoal areas which include Romain Shoal, Bull Breakers, and Rattlesnake Shoal. These shoal areas should be given a wide berth. The 10-fathom curve along this section of the coast extends from 11 to 21 miles offshore.

## Charts 11536, 11534

(21) **Lockwoods Folly Inlet** is entered over a shifting bar 11 miles westward of Cape Fear River. Strangers should not attempt it as the inlet is enclosed by breakers at virtually all stages of tide and wind. Due to frequent changes, mariners are advised to seek local knowledge before entering the inlet. The approach to the inlet is marked by a lighted whistle buoy. The buoys marking the inlet are not charted, because they are frequently shifted in position to mark the best water. There are three charted wrecks, all showing at low water, near the entrance to the inlet; two are at the mouth, and the other is about 0.3 mile to the westward 200 yards offshore. A high sand dune is east of the inlet.

(22) **Lockwoods Folly River** is navigable from the ocean to the Intracoastal Waterway, at the head of the marshes inside the inlet, and thence to a fixed highway bridge at **Supply**, which is at the practical head of navigation 16 miles above the waterway. The channel is narrow, bordered on both sides by oyster bars covered at high water, and not maintained. In 2008, the controlling depth was 4.3 feet from the Intracoastal Waterway to Supply. The river channel is marked by daybeacons to a pier at **Varnumtown**, about 1.6 miles northward of the Intracoastal Waterway where gasoline and water can be obtained. The river is used by commercial shrimp boats to Varnumtown.

(23) An **explosives anchorage** is centered about 3.5 miles southwestward of Lockwoods Folly Inlet. (See **110.170**, chapter 2, for limits and regulations.)

(24) **Shallotte Inlet**, 19 miles westward of Cape Fear River, is entered over a shifting bar and has a winding entrance. A lighted whistle buoy marks the entrance. The bar channel is subject to continual change, and the buoys marking it are shifted frequently to mark the best water, and therefore not charted. The inlet, used only by local fishermen and not recommended to strangers, provides an access from the sea to the Intracoastal Waterway and to **Shallotte River.** The river is navigable to the town of **Shallotte**, about 8 miles above the inlet. In 2008, the river from the Intracoastal Waterway to Shallotte was shoal to bare in several areas; extreme caution is advised. The mean range of tide is 4.6 feet near the inlet and about 3 feet at Shallotte.

(25) Berthage, electricity, gasoline, water, ice, and wet and dry storage are available at the marina on the west bank of Shallotte River, about 0.6 mile above the Intracoastal Waterway. Hull and engine repairs can be made. The facility at Bowen Point is also described with the Intracoastal Waterway in Chapter 12.

(26) **Tubbs Inlet**, 6 miles westward of Shallotte Inlet, is seldom used. It is unmarked and not recommended to strangers.

## Charts 11535, 11534

(27) **Little River Inlet**, 28 miles westward of Cape Fear River, is entered between **Waties Island** on the west and **Bird Island** on the east. A lighted whistle buoy is off the entrance. A submerged wreck is off the entrance at 33°50'00"N., 78°33'00"W. The entrance to the inlet is protected by jetties, each marked on the outer end by a light. The bar channel is subject to continual change, and the buoys marking it are shifted frequently to mark the best water, and therefore not charted. In 2010, the controlling depth in the marked channel leading northward of the eastern end of Waties Island was 3.7 feet from Buoy 10 to the junction with the Intracoastal Waterway. There is a large sand bar centered at 33°51'25"N., 78°32'50"W. Extreme caution is advised when entering and leaving the inlet. The mean range of tide at the inlet is about 5 feet.

(28) Three fish havens, marked by a buoy, are about 2.5 miles southeastward of Little River Inlet in about 38°48.9'N., 78°30.2'W.

(29) Between Little River Inlet and Murrells Inlet are many piers, most of which are marked by lights and extend out some 400 to 1,000 feet into the ocean.

(30) **Myrtle Beach**, a summer resort, is on the outer beach nearly 20 miles southwestward of Little River Inlet and 32 miles north-northeastward from Georgetown Light. Numerous tanks in the area are conspicuous. Hotels and motels along the beach are also prominent. Several radio antennas close-to, marked by red lights, can be seen seaward.

(31) **Murrells Inlet**, 12 miles southwest of Myrtle Beach and 20 miles north-northeastward of Georgetown Light, connects with **Main Creek** and **Oaks Creek**, which drain a considerable area of marsh between the mainland and the outer beach. The entrance to the inlet is protected by jetties. A lighted whistle buoy is off the entrance, and lights mark the outer ends of the jetties. The dredged entrance channel and the channel through Main Creek to a turning basin about 2.9 miles above the entrance are marked by lights and daybeacons. In 2010, severe shoaling existed inside the entrance channel. Safe passage is marked by aids to navigation to 33°32'00"N., 79°02'05"W., thence 2.9 feet to the turning basin, thence 3.6 feet in the basin. In 1981, a wreck was reported off the entrance to the inlet in about 33°31.4'N., 79°01.5'W. Inside the inlet, where the channel turns sharply to northward into Main Creek, the tide rips are strong at full ebb or flood current. Local fishermen use this inlet, but strangers should not enter without local knowledge.

(32) There are three marinas on Main Creek; two are at the landing, and the other is eastward of the landing on the west side of the barrier beach. Berthage, electricity, gasoline, diesel fuel, water, ice, launching ramps, and some marine supplies are available at all facilities; hull repairs can be made at all the facilities. Depths in the

approaches and alongside the piers at the marinas are reported to be about 3 feet. Restaurants and motels are available.

(33) Three fish havens, marked by buoys, are about 3.8 miles east-southeastward, about 10 miles southeastward, and about 5.3 miles southward of Murrells Inlet.

## Charts 11532, 11535, 11531

(34) **North Inlet**, about 14 miles southward of Murrells Inlet and 6 miles northward of Georgetown Light, connects with Winyah Bay by way of both **Town Creek** and **Jones Creek.** Some local fishermen use the inlet, but strangers should not. In 2010, the controlling depth over the bar was 3.3 feet. The inlet and the creeks are unmarked. There is little water on the Winyah Bay side, and navigation is restricted to shallow-draft craft. In 1983, Jones Creek, the southerly of the two, was found to bare in places, and numerous oyster bars were reported.

(35) **Winyah Bay** is the first harbor southward of Cape Fear River, a distance of 70 miles, that is navigable for vessels drawing up to 18 feet. It is entered between **North Island** and **South Island.** The entrance is protected by jetties. The entrance is not safe for small craft except in favorable weather. Heavy tide rips prevail near the ends of the jetties, and heavy seas run in moderate weather. The south jetty is visible only at low water.

(36) **Georgetown**, 14 miles above the entrance to Winyah Bay, is on the north bank about 1.5 miles above the entrance to Sampit River. It is 392 miles south of Norfolk and 247 miles north of Jacksonville by coastwise routes. It has schools, banks, motels, markets, restaurants, a hospital, and many landmarks of historical interest.

### Prominent features

(37) **Georgetown Light** (33°13'21"N., 79°11'06"W.), 85 feet above the water, is shown from a white cylindrical tower on the north side of Winyah Bay entrance. Four 400-foot stacks, at a generating plant west of Winyah Bay and about 4 miles southwestward of Georgetown, have prominent strobe lights at the tops. There are few other prominent objects in the vicinity, and the land is low on both sides of the entrance.

### COLREGS Demarcation Lines

(38) The lines established for Winyah Bay are described in **80.703**, chapter 2.

### Channels

(39) Federal project depth is 27 feet from the sea to South Island Bend; thence 27 feet to Range C; thence 27 feet to Range D; thence the project provides for a depth of 27 feet to the turning basin off the three deepwater terminals on Sampit River. The channel is well marked by lighted ranges, buoys, and other aids. South Island Bend Channel is subject to shoaling and the buoys marking it have been shifted to mark the best water. (See Notice to Mariners and latest editions of charts for controlling depths.)

(40) An unmarked dredged side channel leads from the main river channel along the easterly and northerly sides of the horseshoe-shaped bypassed portion of Sampit River fronting the city of Georgetown to the north end of another turning basin on the westerly side of the horseshoe. Mariners are advised to exercise caution to avoid submerged pilings along the east side of the channel. The turning basin, marked by lights and buoys, can also be entered from the main river channel. (See Notice to Mariners and latest editions of charts for controlling depths.) The channel has a tendency to shoal between dredgings.

### Anchorages

(41) There are no anchorages in Winyah Bay or Sampit River for deep-draft vessels. The recommended anchorage, as reported by the local pilots, is 0.5 mile northeast of the sea buoy (Winyah Bay Lighted Whistle Buoy WB) in about 6 fathoms, sand and mud bottom.

### Dangers

(42) The principal dangers in the approach to Winyah Bay are: **East Bank**, covered 6 feet and marked by a buoy, about 2 miles south of the end of the south jetty; an unmarked shoal, with a least depth of 14 feet, about 4 miles southward of East Bank; **Hector Wreck**, cleared to a depth of 9 feet and marked by a lighted bell buoy, about 12 miles southward of the sea buoy (Winyah Bay Lighted Whistle Buoy WB); a wreck, with 19 feet over it and marked by a lighted bell buoy, about 13 miles southeastward of the sea buoy; a fish haven marked by private buoys about 5 miles northeast of the sea buoy; and obstructions, reported covered 26 feet, 300 yards northward of the sea buoy. Vessels approaching the entrance at night should remain in the vicinity of the sea buoy until the pilot boards. Some vessels, mistaking Winyah Bay Range B Lights for Range A Lights, have approached the entrance too closely at night and only with difficulty have cleared the outer end of the south jetty. Mariners are advised to familiarize themselves with the characteristics of these ranges before making the approach.

(43) The local pilots report that at high water the north jetty at the entrance to Winyah Bay is partially submerged and only the three rock mounds along the south jetty are visible. At low water, parts of the south jetty just inshore of the outermost mound remain submerged. Extreme caution is advised. The pilots also report that the southwest tip of North Island just inside the jetties is building up and is encroaching southward to near the easterly edge of the channel; caution is advised.

**Currents**

(44) The tidal currents are affected by variations in the flow of the tributary rivers. The velocity is greatest between the jetties where the average is between 2 and 3 knots. Tidal ebb currents were reported in the area from 6 to 7 knots, most notable in Range C and South Island Bend; the sets of which are along axis to the channels. The set is alongshore at the entrance close to Lighted Bell Buoy 4. During freshets in the rivers, also with westerly winds, the velocity of the ebb current between the jetties is reported to be very strong at times and the channel buoys between the jetties are nearly towed under. In the channel in Winyah Bay, from the entrance to Georgetown, the tidal current averages about 2 knots, but during freshets the ebb current is considerably stronger and the flood weaker. Near the mouth of Sampit River, the tidal current averages about 1 knot with somewhat stronger ebb current velocities during freshets. When approaching the turning basin from Sampit Point Channel, it has been reported that the flood current sets towards South Carolina State Ports Authority Terminal Pier 31 with considerable velocity and the ebb current sets towards the small island northeast of State Pier 31. Outside the jetties, with fresh to strong northeast winds, a strong southerly current is reported to set across the entrance channel and with southerly and southwesterly winds a northerly set is experienced. (See the Tidal Current Tables for current predictions for a number of places in Winyah Bay and vicinity.)

**Weather, Myrtle Beach and vicinity**

(45) The climate is usually mild and except in severe winters little ice is seen and then only along the banks. The channels are never obstructed. Fog is observed during the fall and spring and usually sets in during southwesterly weather, when it may persist for several days. Nighttime fog, due to a large drop in temperature, usually burns off in the forenoon. Sea fog sometimes hangs offshore or in the entrance when it is clear inside.

(46) Winter temperatures average near 60°F (15.6°C) during the day and in the upper 30's (2.8° to 3.9°C) at night. Temperatures drop to freezing or below only on about 28 days per year; a 4°F (-15.6°C) temperature was recorded one February. Precipitation averages about 3 to 4 inches (76 to 102 mm) per month during the winter and falls on 4 to 6 days per month; snow is rare and about one-half inch (13 mm) is recorded annually..

(47) Summer maximum temperatures usually climb to the upper 80's (30.6° to 31.7°C), while minimums range in the 70's (21.7° to 22.8°C). Temperatures reach 90°F (32.2°C) or higher on about 55 days annually; a reading of 104°F (40°C) was recorded in both June and August. June through August is generally considered the rainy season; about half of the 50-inch (1,270 mm) annual average occurs during these months.

(48) Since 1842, 55 tropical storms have come within 50 miles (93 km) of Myrtle Beach, South Carolina, 18 of these storms since 1950. The most noteworthy likely was Hurricane Hazel which made landfall just north of Myrtle Beach near the border with North Carolina around mid-day on October 15, 1954. With a forward speed of nearly 50 mph (80 km/h), Hazel destroyed nearly everything in its path. Making landfall north of Myrtle Beach lessened damage to the local area, but damage was catastrophic at the nearby North Carolina communities.

**Routes**

(49) Vessels from the northward usually make for the sea buoy from Frying Pan Shoals Lighted Buoy 16. When coming from the southward, they should stay outside Cape Romain Shoal Buoy 6CR and Hector Wreck Lighted Buoy WR4, shaping for the entrance, taking care to avoid the wreck, marked by a lighted bell buoy, about 9 miles east-northeastward of Hector Wreck Lighted Buoy WR4. Some vessels in closing the entrance have mistaken the ranges and come too close to the south jetty; they should remain in the vicinity of the sea buoy until the pilot boards.

**Pilotage, Georgetown**

(50) Pilotage is compulsory for all foreign vessels and for U.S. vessels under register in the foreign trade. Pilotage is optional for U.S. vessels in the coastwise trade which have on board a pilot licensed by the Federal Government. Pilotage is limited to vessel drafts of 21 feet or less.

(51) Georgetown Bar & Harbor Pilots, P.O. Box 594, Georgetown, SC 29440; telephone 843-527-4136, FAX 843-527-4177; serve the entrance through the bar, Winyah Bay and vicinity.

(52) The pilot boat, WINYAH BAY, is 48 feet long and has a black hull and white superstructure. The alternate pilot boat, PILOT FISH, is 31 feet long and has a black hull and white superstructure. The pilot boats monitor VHF-FM channel 16 and use channel 9 as a working frequency. Vessels are requested to contact the pilot boat approximately 2 hours before scheduled inbound transit for pilot boarding information. Pilots will board day or night from the pilot boat just east of the sea buoy, Winyah Bay Lighted Whistle Buoy WB in 33°11'36"N., 79°05'12"W.

(53) Arrangements for pilots should be made in advance by telephone and/or fax, by radiotelephone, or through ships' agents.

**Towage**

(54) Tugs up to 2,000 hp are available in Georgetown, and up to 4,000 hp are available with 24-hour notice. Tugs are required for docking and undocking large oceangoing vessels; tugs meet vessels just below Georgetown. Arrangements for such services are usually made well in advance through ships' agents.

### Quarantine, customs, immigration, and agricultural quarantine

(55) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(56) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) There is a county hospital at Georgetown.

(57) Georgetown is a **customs port of entry.**

### Coast Guard

(58) Georgetown Coast Guard Station is on the west bank of the Great Pee Dee River about 0.25 mile south of U.S. Route 17 highway bridge.

### Harbor regulations

(59) The South Carolina State Ports Authority exercises jurisdiction over the port facilities through the manager of the State Ports Authority Terminal at Georgetown. The manager's office is at the terminal.

### Wharves

(60) Only the major port facilities at Georgetown are described. The wharves have highway connections, and most have railroad connections, and water and electrical shore power available. General cargo is handled at the port by ship's tackle; special handling equipment, if available, is mentioned in the description of the particular facility. The alongside depths given for each facility described are reported depths. (For information on the latest depths, contact the manager.) There are several seafood-handling and small-craft service wharves along the city waterfront. For a complete description of the port facilities, refer to Port Series No. 13, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(61) **Georgetown Terminal Pier 32** (33°22'00"N., 79°17'30"W.): northwest side of bypassed portion of Sampit River; marginal wharf with 600-foot face; 712 feet usable with dolphins; 27 feet alongside; deck height, 15 feet; cranes to 90 tons; handles scrap metal, ore, charcoal, and steel products; owned by South Carolina State Ports Authority and operated by Georgetown Steel Corp.

(62) **Georgetown Terminal Pier 31, Berth 2** (33°21'47"N., 79°17'19"W.): south-southwest side of bypassed portion of Sampit River; 700-foot face; 27 feet alongside; deck height, 10 feet; handles conventional general cargo, salt, lumber, and steel; operated by South Carolina State Ports Authority and International Salt Co.

(63) **Georgetown Terminal Pier 31, Berth 1** (33°21'35"N., 79°17'15"W.): north side of turning basin; marginal type wharf with 500-foot face; 27 feet alongside; deck height, 12 feet; handles conventional general cargo, lumber, steel, and paper products; operated by the South Carolina State Ports Authority and Marine Contracting and Towing Co.

(64) **Pier 31 Cement Berth**: on north side of turning basin just west of Pier 31, Berth 1 92-foot face; 192 feet of berthing space with dolphins; 27 feet alongside; deck height, 11 feet; handles cement; operated by Delta Cement Co.

(65) **International Paper Co., Ship Dock:** north side of turning basin, about 350 yards westward of Pier 31: marginal type wharf with 475-foot face; 27 feet alongside; deck height, 10 feet; handles paper products.

(66) **International Paper Co., Upper Wharf:** north side of Sampit River about 0.9 mile westward of Pier 31; 350- and 153-foot faces, 1,653 feet usable berthing space with dolphins; 10 feet alongside; deck height, 10 feet; mooring barges.

### Supplies

(67) Marine supplies and provisions can be obtained at Georgetown. Diesel fuel is trucked to the deepwater piers or barged in from Charleston.

### Repairs

(68) There are no facilities available at the port of Georgetown for making major repairs or drydocking large, deep-draft vessels; the nearest such facilities are at Charleston, SC. The International Paper Co. has two marine railways at its marine repair piers on the north side of Sampit River, about 0.3 mile westward of the State Ports Authority Terminal. These facilities are for maintaining and repairing company-owned floating equipment, but are available to the public in an emergency or by prior arrangement. Each railway can handle vessels up to 95 tons.

(69) There are machine repair shops in Georgetown; minor above-the-waterline hull and engine repairs can be made.

### Small-craft facilities

(70) There are several facilities on the east side of the bypassed portion of the river along the city waterfront. Gasoline, diesel fuel, berthage with electricity, water, ice, provisions, marine supplies, pump-out station and wet and dry storage are available. A 7½-ton lift and hull and engine repairs are available. Another marina is at **Belle Isle Garden** on the west side of Winyah Bay, about 3.3 miles below Georgetown. Berths, electricity, pump-out station, gasoline, diesel fuel, ice, water, a launching ramp and marine supplies are available. In 2011, the reported approach depth was 4 feet.

### Communications

(71) Georgetown is served by several good highways, and by the Class II railroad.

(72) Above Georgetown the principal landing on **Sampit River** is at **Sampit** about 10 miles above the river mouth. U.S. Routes 17 and 701 highway bridge crossing the river at Georgetown has a fixed span with a clearance of 65 feet. The overhead power cable about 0.9 mile above

the bridge has a clearance of 61 feet. In 1975, the reported controlling midchannel depth from the bridge to **Sampit Landing** was 7½ feet. Sampit River above Georgetown is not marked.

(73) **Waccamaw River** rises at Lake Waccamaw, NC, and flows southwestward into Winyah Bay just above Georgetown. The river is little used, except for that section which is a part of the route of the Intracoastal Waterway described in chapter 12. The route of the waterway leaves Waccamaw River near Enterprise Landing, about 24 miles above the mouth.

(74) The controlling depth in Waccamaw River from Enterprise Landing to **Conway**, 36 miles above the mouth, was reported to be 5 feet in 1983. This section of the river is marked by daybeacons to near Conway. Above Conway the river is obstructed by logs, snags, and sandbars. The mean range of tide at the river entrance is 3.6 feet and 1.2 feet at Conway. The head of the tidal reach is at **Bellamys Landing**, 80 miles above the mouth. (For predictions see the Tide Tables.) The freshet range at Conway is about 13.5 feet.

### Bridges

(75) About a mile below Conway, the US 501 Bridge, a fixed bridge, with a clearance of 35 feet, crosses the Waccamaw River. The US 501 (business) Bridge, at Conway, is a fixed bridge with a clearance of 36 feet. A railroad bridge, also at Conway, is a swing bridge, with a clearance of 1 foot. (See **117.1** through **117.59** and **117.938**, chapter 2, for drawbridge regulations.)

### Cables

(76) An overhead power cable with a clearance of 76 feet crosses the Waccamaw River about 3 miles above Enterprise Landing. An overhead cable of unknown clearance crosses the river about 0.8 mile below the US 501 Bridge. An overhead cable of unknown clearance crosses the river at Savannah Bluff, about 400 yards below the US 501 Bridge. An overhead power cable with a clearance of 59 feet crosses the river just above the US 501 Bridge.

(77) **Kingston Lake** enters Waccamaw River at Conway. The railroad bridge, has a fixed span, with a clearance of 3 feet crosses Kingston Lake about 100 yards north of its junction with Waccamaw River. An overhead power cable near this bridge has a clearance of 50 feet.

(78) **Great Pee Dee River** rises in the North Carolina mountains and flows generally southeastward into Winyah Bay just westward of Waccamaw River. A marina at **Georgetown Landing** on the west side of the Great Pee Dee River, just below the U.S. Route 17 fixed bridge, provides berths, electricity, gasoline, diesel fuel, water, ice, pump-out station, wet storage, and marine supplies. In 2011, the reported approach depth was 12 feet. U.S. Route 17 fixed highway bridge over Great Pee Dee River just above the mouth at Georgetown has a clearance of 20 feet. About 300 yards northward of this bridge the 80-foot swing span of the former Route 17 highway swing bridge has been removed; the fixed portions of the bridge on either side of the channel remain as fishing piers. The channel between the piers is marked by lights. The velocity of the current at the former bridge is about 1 knot. (For predictions see Tidal Current Tables.) At **Yauhannah**, 28 miles above the mouth, the river is crossed by U.S. Route 701 fixed highway bridge with a clearance of 25 feet.

(79) The railroad bridge near **Poston**, about 62 miles above the mouth, is the head of commercial navigation. The river is unmarked.

(80) **Black River** empties into Great Pee Dee River from northward about 3 miles above the mouth of the latter and is navigable for a distance of 44 miles. The river is unmarked. The bridges over Black River have minimum channel widths of 16 feet and minimum clearances of 1 foot. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) The mean range of tide in Great Pee Dee River is 3.3 feet at the mouth and 0.2 feet at the mouth of Little Pee Dee River, 33 miles above. **Mingo Creek** flows into Black River about 22 miles above the mouth of the latter. When last ascertained, the controlling depth in this creek was 8 feet. The mean range of tide is 2 feet, and the freshet range is 4.5 feet.

## Chart 11531

(81) Between Winyah Bay and Charleston Harbor are several rivers and inlets which are changeable in character, and local knowledge is essential to enter even under favorable conditions. Some dry at low water, and in the others the depths range between 1 and 6 feet. Suitable anchorages for small craft can be found inside these inlets or in their tributary waters. At most entrances, the channels trend in northerly directions, and shoals and breakers generally mark the channel edges inside the bars. Entrances to North Santee River and Bulls Bay are less difficult of navigation than the other entrances in this locality, but these should be entered only at high water under favorable weather conditions.

(82) Between Winyah Bay entrance and Cape Romain, broken ground, with depths of less than 5 fathoms, extends 11 miles offshore. In addition, East Bank, Hector Wreck, and a 14-foot spot about 6 miles offshore, all previously mentioned as dangers in the approach to Winyah Bay, should be avoided.

(83) **Santee River**, formed by the confluence of **Congaree River** and **Wateree River**, flows generally southeast and enters the ocean between Winyah Bay and Cape Romain. Its two mouths, known as **North Santee River** and **South Santee River**, are both obstructed by shifting bars with little depth. In the tidal reach are several privately owned landings which are used infrequently. The river is closed to navigation at Wilson Landing, 75 miles above the mouth, by the Santee Dam.

(84) Vessels bound for Santee River are advised to enter by way of Winyah Bay and the Intracoastal Waterway.

Navigation between the coast and points on Santee River above the dam is possible by way of Cooper River and the Santee-Cooper project. The U.S. Route 17 twin fixed highway bridges over North and South Santee Rivers, about 12 miles above the mouths, have clearances of 29 feet over North Santee River and 15 feet over South Santee River.

(85) **Cape Romain**, the southeasterly extremity of Cape Island, is about 14.5 miles southwestward of the entrance to Winyah Bay. **Cape Romain National Wildlife Refuge**, a Marine Protected Area (MPA), extends about 20 miles along the coast from Cape Romain to Bull Island.

(86) **Cape Romain Shoal**, with depths of 4 to 18 feet over it, extends 4 miles southeastward from Cape Romain. The outer end of the shoal is marked by a buoy. The twin towers of an abandoned lighthouse, the taller 165 feet high, stand on the east end of **Lighthouse Island**, northwestward of Cape Romain. A 335-foot microwave tower and a 108-foot lookout tower at McClellanville, about 6 miles inland, are also conspicuous from seaward.

(87) **Cape Romain Harbor**, with depths of 1 to 2 feet, is an unimportant cove indenting the western shore of **Cape Island**. The harbor, used only by small local fishing craft, is approached from northward through a narrow, crooked, unmarked channel leading from sea around the north end of Cape Island. In 1983, the reported controlling depth was 3 feet. In 1983, the approach leading from the south between Cape Romain and Lighthouse Island to Cape Romain Harbor was reported closed. **Casino Creek** is one of several creeks and connecting passages that lead from inside of Cape Island to the Intracoastal Waterway; in 1983, the reported controlling depth was 1½ feet in Casino Creek. The use of the creeks requires local knowledge; the chart is the best guide.

(88) **Five Fathom Creek**, about 4.2 miles westward of the southwestern extremity of Cape Island, is entered westward of **Sandy Point** at the western end of **Raccoon Key.** The creek, narrow and crooked at its upper end, is marked by a light and daybeacons. In 1988, the entrance to Five Fathom Creek from Bulls Bay had a reported controlling depth of 3 feet; thence in 1983, a reported controlling depth of 3½ feet to the Intracoastal Waterway. In 1985, shoaling to an unknown extent was reported just north of Sandy Point. The outer bar is subject to change; caution and local knowledge is advised.

(89) A dredged channel just northeast of Sandy Point at **Sandy Point Beach**, connects to Five Fathom Creek through **Clark Creek**. In 2010, the controlling depth to Five Fathom Creek was 1 foot. The channel is marked by buoys.

(90) **Bulls Bay**, southwest of Raccoon Key, is entered between Sandy Point on the north, and **Northeast Point** on the south. The bay is broad and shallow, and has numerous shoals, many of which are bare at low water. A 56-foot steel skeleton fire lookout tower west of the bay is conspicuous from seaward. In 1983, the narrow channel into **Bull Creek**, at the southwest side of the bay, had a reported controlling depth of about 7 feet over the bar, thence 2 feet from **Northeast Point** to **Bull Narrows**. In 1983, it was reported that shoaling to bare extends 1.1 miles eastward from Northeast Point. The creek is used occasionally as an anchorage. Local knowledge is advised. **Bull Breakers** extend 4 miles southward from **Bull Island**, on the southwest side of the entrance to Bulls Bay, and are marked at their outer end by a buoy. The 131-foot steel skeleton lookout tower of the former Bull Island Lifeboat Station is prominent.

## Chart 11521

(91) **Price Inlet** (32°52.5'N., 79°39.1'W.), between Bull Island and **Capers Island,** had a reported depth of about 3 feet over the bar in 1983. The channel is unmarked, and breakers have been observed across the entire area. The controlling depth in **Price Creek** from the inner edge of the bar to the Intracoastal Waterway was reported to be 5 feet in 1983. The inlet, the best between Bulls Bay and Charleston, is used by local fishermen. With average weather conditions, there are heavy breakers on the shoal on the eastern side of the channel and small breakers on the west side. Good anchorage is available in Price Creek. An overhead power cable with a clearance of 85 feet crosses Price Creek about 0.5 mile above the mouth.

(92) **Capers Inlet**, between Capers Island and **Dewees Island**, in June 1983, had a reported depth of about 1½ feet over the bar, and breakers extended across the entire entrance. In June 1983, the reported controlling depth was 8 feet in **Capers Creek** from the inner edge of the bar to the Intracoastal Waterway. The channel is narrow and unmarked. Because of the shoal that extends eastward on the south side of the inlet and breaks the southwesterly seas, the channel can be entered when the wind is southwest. A shoal bare at about half tide extends southward along the eastern side of the inlet. There are numerous stumps and snags outside the high waterline in Capers Creek. An overhead power cable over Capers Inlet has a clearance of 86 feet.

(93) **Dewees Inlet**, between Dewees Island and Isle of Palms, had a depth of about 2 feet over the bar in 1983, thence deeper water inside to the Intracoastal Waterway via **Dewees Creek.** The channel is narrow, unmarked, and seldom used. Breakers extend across the entrance to the inlet. An overhead power cable over Dewees Inlet has a clearance of 87 feet.

(94) A water tower at the pleasure resort near the southwest end of the Isle of Palms and a lookout tower on Dewees Island are prominent. An unmarked fishing pier projects seaward from the resort. Two wrecks, about 0.35 mile apart, are off the eastern shore of the Isle of Palms about 1.5 miles 107°30' and 1.6 miles 120°30' respectively, of the water tower. The wrecks are believed to be the remains of Confederate ships which were apparently sunk by Union forces as they sought to slip into

blockaded Charleston Harbor; they are unmarked and are covered 6 feet and 4 feet, respectively. An obstruction, covered 9 feet and unmarked, is about 2.55 miles 125° from the water tower. Caution is advised in this area.

(95) **Breach Inlet** is between Isle of Palms and Sullivans Island. There is very little water over the bar, and breakers extend entirely across the entrance under almost all weather conditions. Currents are extremely strong in this inlet. A highway bridge over the inlet has a fixed span with a clearance of 5 feet.

## Charts 11523, 11524, 11521

(96) **Charleston Harbor**, 264 miles southwestward of Cape Hatteras and 65 miles northeastward of Savannah River, is the approach to the city of Charleston and to the Cooper, Wando and Ashley Rivers. The harbor is easy of access day or night in clear weather, and is one of the best harbors of refuge on the South Atlantic coast. **Charleston Harbor Wildlife Sanctuary** is a Marine Protected Area (MPA).

### Caution

(97) The areas generally to the east and southeast of Charleston Harbor are used extensively by the U.S. Navy and other military services to conduct various types of surface, subsurface, and aircraft training exercises. Fleet Area Control and Surveillance Facility (FACSFAC), Jacksonville, FL, exercises cognizance of the operating areas, makes area assignments, ensures promulgation of firing notices, issues schedules, and prescribes necessary additional regulations.

(98) The entrance to Charleston Harbor is between converging jetties. The north jetty is almost completely submerged at MHW. There are no lights on the jetties and smaller craft approaching from the north close to shore at MHW should exercise extreme caution not to confuse the south jetty for the north jetty. It is recommended all vessels align seaward of Lighted Buoy 18 before final approach to the jetty entrance.

(99) **Charleston**, the largest city and port in South Carolina, is at the confluence of Cooper and Ashley Rivers. The distance from the end of the jetties to the southernmost wharves at Charleston is about 7 miles. The city is a center of a rich agricultural district for which it is the distributing point. Numerous manufacturing plants are in and near the city. The principal wharves are along the west bank of Cooper River and the east bank of the Wando River. Imports are building cement, plywood, wool, bananas, nonferrous ores, chemicals, fertilizer, frozen meats, automobiles, steel products, naval stores and petroleum products. Exports are soybeans, clay, paper products, corn, woodpulp, lumber, heavy machinery, chemicals, fertilizer, textiles, automobiles and general cargo.

### Prominent features

(100) The entrance to Charleston Harbor is between converging jetties which extend nearly 3 miles seaward. Prominent to the northward of the entrance are several tanks on Sullivans Island and one on Isle of Palms, and the Charleston Light. **Fort Moultrie** and the town of **Sullivans Island** are on the north side of the entrance; the 155-foot conical tower of the abandoned old Charleston Lighthouse on Morris Island is south of the entrance; **Fort Sumter** is on the southwest side of the channel just inside the entrance.

(101) The twin diamond-shaped towers of the (U.S. Route 17) Ravenel fixed bridge are reported to be 575 feet tall and clearly visible to the mariner before entering the channel. The bridge is brightly lit at night. Lighted buoys mark the west and east sides of the channel, respectively.

(102) **Charleston Light** (32°45'29"N., 79°50'36"W.) 163 feet above water, is shown from a triangular tower, upper half black, lower half white, on Sullivans Island.

### COLREGS Demarcation Lines

(103) The lines established for Charleston Harbor are described in **80.710**, chapter 2.

### Charleston Harbor Navigational Guidelines

(104) In recent years, a substantial number of oceangoing vessels of increased size and draft have begun calling at the Port of Charleston. Although the waterways of Charleston Harbor compare favorably with other ports of the same approximate volume of shipping, the maritime interests of the port have prudently considered the publication of a number of safe navigational practices and procedures that have evolved in recent years. These practices and procedures are known as the Charleston Harbor Navigational Guidelines.

(105) It is recommended that all vessels, particularly those which must navigate in the channel because of draft constraints, hereafter referred to as deep-draft vessels, strictly adhere to these guidelines. Nothing in them shall supersede nor alter any applicable laws or regulations. In construing and complying with these guidelines, regard shall be had to all dangers to navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from the guidelines necessary to avoid immediate danger.

(106) For purposes of these guidelines, **poor-handling vessels** are those, which because of their configuration, history of loss of controllability, or steering characteristics, or low power, are unable to consistently navigate within the channel half width or cannot maintain a speed of 8 knots through the water. If an adequate number of tugs are made fast to provide maneuverability, power, and a capable speed through the water of at least 8 knots, the assisted vessel will not be considered a poor handling vessel. Tandem tows, except for small

scows and nondescript vessels which operate outside the main channel should not be attempted.

(107) For the purposes of these guidelines, the inbound approach to the (U.S. Route 17) Ravenel fixed bridge spans over Hog Island Reach commences at Lighted Buoy 28 (32°46'22"N., 79°53'15"W.) on Rebellion Reach. Inbound vessels intending to transit the Cooper River upstream of the fixed bridge should give a security call on VHF-FM channel 13 upon entering Mount Pleasant range (32°44.4'N., 79°50.7'W.). Commercial vessels outbound from piers above the fixed bridge should give a similar Security call when unmoored or beginning the downbound transit. Poor-handling vessels intending to transit reaches of the Cooper River above Rebellion Reach should be prepared to delay their transit to allow other vessels to clear outbound or to allow full-powered and more maneuverable vessels to precede them. Inbound poor-handling vessels should not proceed in Rebellion Reach past Buoy 28 but rather should anchor or heave-to out of the channel to await the passage of outbound vessels or more maneuverable inbound vessels. Outbound poor-handling vessels should not depart their berths until inbound vessels have passed clear of their berths, or until other vessels scheduled to depart have left their berths and have preceded them down the reaches of the Cooper River.

(108) The maritime interests at the Port of Charleston construe that the navigation safety regulations contained in Title 33, Code of Federal Regulations, Part 162.65, exist to preserve the safety of the port and waterways of Charleston. These regulations are supported by these local interests and reports of violations of those regulations on the part of noncomplying vessel operators will be reported to Coast Guard authorities.

**Draft limitations**

(109) While the project depths for Charleston Bar and Charleston Harbor are published as 47 feet and 45 feet, respectively, private dredging operations and natural influences have normally permitted vessels of slightly greater draft than 45 feet to transit the main channels of Charleston Harbor. Tidal ranges average 5.2 feet in most harbor locations. Bar and harbor pilots at Charleston consider actual depths based upon recent soundings, the state of the tide, and the need for under keel clearances to allow for both static and dynamic hydraulic effects between harbor bottom, hull, and the ship's propeller(s). The pilots generally require a four foot margin for clearance, between the lowest point on the vessel's hull and the harbor bottom, for vessels transiting Charleston's waterways at normal harbor speeds. The pilot office provides guidance on all vessel movements in which the vessel's deepest draft is greater than 36 feet, and for tank vessels with deepest drafts over 34 feet.

**Low visibility**

(110) Not infrequently, portions of Charleston Harbor are affected by poor visibility. This occurs during line squalls of heavy rain accompanying the passage of frontal systems, rare snow squalls, and fog. Fog associated with a generalized weather pattern occasionally settles over the entire port area including the fairways offshore. Fog over only a part of the harbor, however, is a reasonably frequent occurrence. Vessels, having unmoored in good visibility, may find during their transit that visibility has become reduced to a few yards. Similarly, vessels proceeding inbound from the sea buoy may commence the transit in good visibility only to lose it while transiting the Charleston Harbor.

(111) These aforementioned reduced visibility conditions may last for only several hours or they may extend to several days. The purpose of these guidelines is not to amend nor negate the application of the Rules of the Road and good navigational practice, but to assist vessels underway in transiting the harbor expeditiously and with minimum risk to themselves and to the port. The Commissioners of Pilotage for the Port of Charleston have issued policy guidance to pilots that whenever visibility is less than 1,000 yards, pilots should not knowingly get a vessel underway outbound, or proceed inbound inshore of Lighted Buoys 27 and 28 on Rebellion Reach, unless an emergency or other special circumstance exists. The pilots licensed by the Commissioners are required to comply with such policy.

(112) During periods of low visibility, the Charleston Branch Pilots provide information to Navy Port Services Division and the National Weather Service on actual visibility conditions experienced at the Pilot Office, located on the Battery (32°46.4'N., 79°55.5'W.), on board the Association pilot boats, and on board oceangoing vessels being piloted by Charleston Branch Pilots. The pilot office monitors VHF-FM channels 13, 14, 16 and 18A on a continuous basis.

(113) The Charleston Branch Pilots Office provides information on visibility and vessel movements to mariners, when requested, and when such information is available. The Charleston Branch Pilots do not accept responsibility for financial losses resulting from information that is provided by their office, nor do they accept liability in the event that deaths, injuries and/or property damages may result from the use or misuse of information provided by the pilot office. The pilot office is, however, in the best position to determine when reduced visibility exists in the Lower Harbor. At times when reduced visibility exists, regulatory action by the Coast Guard Captain of the Port may be necessary. The Charleston Branch Pilots Association may contact the Captain of the Port and recommend such action as may be necessary consistent with the policy guidance of the Commissioners of Pilotage.

(114) At no time shall the Navigation Rules, International-Inland be abridged or amended by these low visibility navigational guidelines. These guidelines are intended

to enhance safety under conditions wherein navigation is not otherwise constrained.

**Areas of Particular Concern**

(115) Four areas in the Cooper River are considered to be particularly troublesome. These areas are listed in order of ascension when proceeding from sea.

(116) (1) **Intracoastal Waterway** (32°45.7'N., 79°52.3'W.). This represents the eastern conjunction of this waterway with Rebellion Reach. Westbound vessels proceeding on the waterway into Charleston Harbor are not readily visible to vessels inbound from sea until they are clear of the northernmost part of Sullivans Island. This waterway is extensively used by tows, and its junction with the harbor of Charleston is subject to strong and unpredictable crosscurrents at various stages of the tide. Westbound tows intending to enter Charleston Harbor from the Intracoastal Waterway should give a Security call on VHF-FM channel 13, 15 minutes prior to entry, or upon clearing the Ben Sawyer Bridge (32°46.3'N., 79°50.5'W.), and adjust speed so as to enter the harbor when the channel is clear. Every effort, including holding, should be made to avoid unduly restricting deep-draft vessels transiting the main ship channel, and allow them to clear this area when either inbound or outbound.

(117) (2) **Drum Island Turn** (32°48.8'N., 79°54.9'W.). Navigation of this turn is complicated by (a) poor visibility caused by Drum Island blocking the view of vessels approaching one another, (b) close proximity, 700 yards, to the fixed bridge span over Hog Island Reach, and the vulnerability of the bridge to collision in the event vessel control is lost, and (c) crosscurrents on ebb tide from the confluence of the Cooper and Wando Rivers. Vessels should make every effort to avoid meeting at this turn, which includes Hog Island Reach above Lighted Buoy 41, north of the Ravenel Bridge. Commercial vessels should give another Security call on VHF-FM channel 13, 15 minutes prior to arriving at this turn. The vessel with the fair tide should initiate a proposal for meeting or passing and the vessel stemming the tide should hold as necessary. Any departure from this procedure should be agreed to by both vessels in a timely manner. Poor-handling vessels should not attempt to navigate this turn, except when a suitable number of tugs are immediately available for assistance, because such vessels are likely to become unmanageable, raising a substantial risk of collision with the bridge abutments and, thereby, becoming a threat to the lives of persons in the vehicles on the bridge. Local knowledge is necessary to predict current effects as they tend to set across the channel on both the flood and ebb.

(118) (3) **Shipyard Creek Junction** (32°49.7'N., 79°55.8'W.). This junction is complicated by the movement of vessel traffic in and out of Shipyard Creek and by ebb currents of unusually high velocity. Upbound low-powered vessels, particularly tugs with deep-draft tows, should not attempt transit of this area, except on flood tide, as their speed over the ground will be so slow that they will effectively restrict the main channel for hours. Tankships moored at the oil terminal facing on the lower portion of Daniel Island Reach are susceptible to current surges and suction from passing deep-draft vessels. Tankships mooring at that facility should employ an array of suitable mooring lines including wire ropes and winches with manually or hydraulically set brakes. It is recommended that a listening watch be maintained on VHF-FM channel 13 so that mooring lines can be tended during the passing of deep-draft vessels whose Security broadcasts have announced their intention to transit the upper Cooper River. In addition, vessels so moored may advise the Office of the Charleston Branch Pilots Association of their working frequencies so that such VHF communications between piloted vessels and moored vessels may be facilitated.

(119) (4) **North Charleston and Filbin Creek Reaches** (32°52.2'N., to 32°53.8'N., 79°57.9'W.). The main channel in these reaches is immediately adjacent to the pier heads of a number of oil terminals which receive tank vessels. The channel in these reaches is minimally 500 feet in width, thus the passage of deep-draft vessels often occurs in close proximity to moored tank vessels transferring bulk liquid inflammable, combustible and hazardous cargoes. The presence of the Route I-526 highway bridge and its vertical structures that are surrounded by a "rip-rap" protective fender system, further restricts navigation. When tank vessels are moored at any of these facilities, the situation becomes complicated by the wake effect and suction from passing vessels upon cargo hose and mooring lines of moored tank vessels and the possible loss of visibility of the bridge structure owing to the disbursement of large quantities of water vapor into the atmosphere from a nearby industrial plant. To provide the maximum distance between moored and passing vessels, the area encompassed by these reaches should be limited to one way traffic with respect to the transit of deep-draft vessels past any tank vessel moored at one, or more, of the several oil terminal docks. Likewise, no deep-draft vessel should overtake and pass another vessel in these reaches in the vicinity of moored tank vessels. Deep-draft commercial vessels intending to transit these reaches should make a Security call on VHF-FM channel 13, 15 minutes prior to the intended transit and shall adjust speed so as to avoid a meeting or passing situation in the vicinity of moored tank vessels. While passing moored tank vessels, transiting deep-draft vessels shall give due regard for the wake and suction effects upon the moored vessels. Local knowledge is necessary to predict current effects as they tend to set across the channel on both flood and ebb. Poor-handling vessels should be assisted by a suitable number of assist tugs when transiting these reaches to avoid collision with tank vessels moored at the oil terminals. It is recommended that moored tank vessels maintain a listening watch on VHF-FM channel 13 to be alert to the intentions of deep-draft vessels to

transit these reaches, and thereby have line handlers prepared to tend mooring lines during the transit. In addition, vessels so moored should advise the Office of the Charleston Branch Pilots Association of their working frequencies so that such VHF communications between piloted vessels and moored vessels may be facilitated.

(120) To prevent problems which might arise from failure to exchange information necessary for safe meeting and passing on the river, the Coast Guard Captain of the Port conducts spot check monitoring of VHF-FM channel 13.

### Seagoing Tugs and Barges

(121) Seagoing tugs and barges arriving at or departing Charleston Harbor should, upon arrival, make a **security call** 15 minutes prior to entering Fort Sumter Range, or upon departing a dock or anchorage, make a security call 15 minutes before getting underway. Such security calls should be made on VHF-FM channel 13. It is recommended that such vessels further call the Charleston Branch Pilots' Association on VHF-FM channel 16 to ascertain the presence and movement of other vessels on the bar and in the harbor.

### Small-craft Precautions

(122) Small craft should comply with the Federal Regulations of **33 CFR 162.65(b)**, Chapter 2. Small craft should take precautions whenever anchoring or mooring in close proximity to the main shipping channels by always maintaining a proper lookout, displaying proper navigational lights, and exercising good seamanship. Such small craft are subject to the hydraulic and hydrodynamic effects generated by deep-draft vessels passing in the main shipping channels even when such deep-draft vessels are proceeding at minimally slow speeds necessary to maintain steerageway. These effects can cause extreme surging and, in shallow water, can generate high waves. Vessels anchored in shallow water seeing the approach of a deep-draft vessel should get underway and meet these potential hydraulic and dynamic effects in a safe and seamanlike manner. Small craft should never anchor by the stern nor should they moor to the rock jetties, aids to navigation or bridge abutments.

### Procedures for docking and undocking in Charleston Harbor

(123) The procedures for docking and undocking deep-draft vessels in Charleston Harbor have been developed by the Charleston Harbor Navigation Safety Committee. These procedures were developed with conventional vessels in mind; they do not preclude case-by-case consideration of other vessels representing the application of advanced technology in vessel controllability systems or any other mitigating circumstances. The general rules regarding vessels moored at commercial vessel berths are:

(124) (1) Vessels to be docked must have a 50-foot horizontal clearance at both bow and stern from vessels already docked at berths adjacent to the intended berthing space.

(125) (2) The South Carolina State Ports Authority Terminal Tariff No. 8, Rule 34-170, requires calling at Authority berths to use tugs.

(126) (3) The following mooring assist tug guidelines are recommended for vessels calling at Charleston Harbor Terminals:

(127) **Columbus Street Terminal**: Vessels calling at all berths at the SCSPA Columbus Street Terminal present a risk of allision with the U.S. Route 17 Arthur Ravenel Bridge span over Town Creek, which is situated less than 1,400 feet from the furthest inland berth at that Terminal, if the movements of those vessels are not safely arrested and controlled during docking and undocking maneuvers. Therefore, an appropriate number and capability of tugs should be employed to assist with the movement of the vessels of various dimension and draft with due consideration to the tidal currents and the direction of vessel movement, i.e. inbound or outbound.

(128) (a) For docking or undocking, vessels over 50,000 Dead Weight Tons (dwt) should employ two tugs:

(129) 1. A tractor tug as an escort tug capable of rendering assistance through its influence on the speed and direction of travel of the vessel in the event of a casualty, steering or propulsion failure, and thereby reducing the possibility of an allision. The tractor tug should not be less than 4,000 hp; and

(130) 2. A tug employed to control the vessel's head. The tug should not be less than 3,300 hp, unless the vessel is fitted with a fully functional bow thruster, in which case a 3,000 hp tug may be used.

(131) Vessels over 50,000 dwt should not moor starboard side to on ebb tide.

(132) (b) For docking or undocking, vessels between 30,000 dwt and 50,000 dwt should employ two tugs:

(133) 1. Either a tractor or conventional tug, not less than 3,300 hp, as an escort tug;

(134) 2. A second tug capable of assisting the vessel's head.

(135) Vessels between 30,000 dwt and 50,000 dwt should not moor starboard side to on ebb tide.

(136) (c) For docking or undocking, vessels less than 30,000 dwt should employ a tug, not less than 3,300 hp, as an escort and a second tug capable of assisting the vessel's head.

(137) (d) Tugs employed to the guidelines as escort tugs shall meet up with inbound vessels not later than Rebellion Reach.

(138) **Allied Terminal:** Vessels over 40 feet in draft, when docking, shall arrive at the terminal in such time so as to complete mooring operations prior to the commencement of ebb tide. There are no undocking restrictions. Vessels with a draft of 34 feet or less may dock at any time.

(139) **Shipyard River Coal Terminal, Chevron, Braswell and Detyens Shipyards, Salmons:** There are no undocking restrictions at these facilities. Docking shall be accomplished on flood tide only (off mouth of Shipyard Creek).

(140) **McCalloy:** Docking shall be accomplished at flood tide only (off mouth of Shipyard Creek). Vessels over 535 feet in length shall undock only during daylight. The maximum length of vessels that can be accommodated is 580 feet. There are no other undocking restrictions.

(141) **Navy Facilities:** Former Naval Station Pier "K"; North side; docking and undocking of vessels shall be during slack water or flood tide. South side; docking and undocking of vessels shall be on slack water only. Navy small craft are exempt from this restriction. Naval Weapons Station (NWS), Pier "A", 950' "Bob Hope"–class, flood tide only.

(142) **South Carolina State Ports Authority North Charleston Terminal ("Port Terminal"), Grain Dock and the Navy Weapons Station "TC" Dock:** There are no undocking restrictions. There are no docking restrictions on vessels less than 700 feet in length. Ships 700 feet and over should not be docked starboardside-to during ebb tide.

(143) **Koch, Alcoa, Fina, North Hess, Marathon, Shell:** No restrictions on docking or undocking, except that deep loaded tankships shall not be docked starboardside-to during ebb tide.

(144) There are no restrictions at any other commercial terminal in Charleston Harbor (i.e., Amoco, Westvaco) provided that adequate depths of water are maintained at dockside.

(145) In construing and complying with these docking restrictions, regard shall be had to all special circumstances which may make a departure from these guidelines necessary to avoid danger.

(146) Published tide tables provide tidal conditions at certain selected locations. For specific tidal conditions at the various berths, mariners are urged to consult the docking tug companies.

### Channels

(147) The entrance to Charleston Harbor is between converging jetties, the inner portions of which are submerged. The north jetty is almost completely submerged at MHW from offshore to about 32°44'28"N., 79°49'56"W., thence submerged to shore; caution is advised. Mariners should align seaward of Lighted Buoy 18 on their final approach. An opening in the south jetty is marked by buoys and had a reported controlling depth of 20 feet in 2009.

(148) A Federal project provides for a channel 47 feet deep over the Bar (Ft. Sumter Range) and through the Harbor entrance and, thence 45 feet deep into the major reaches of Cooper River, Wando River and Town Creek to Goose Creek, 13.6 miles above the mouth; and a connecting channel into Shipyard Creek 32 feet deep. A 35-foot Navy-maintained channel extends from the head of the Federal project in Cooper River to a turning basin at a naval facility, about 2.6 miles above Goose Creek; thence 30 feet for another 0.8 mile. The channels require constant dredging to maintain them at or near project depths, due to the silting of Cooper River. (See Notice to Mariners and latest editions of charts for controlling depths.) **South Channel,** from the main channel to off the Battery, is no longer maintained. In 1996, the controlling depths were 24 feet from a junction with Rebellion Reach to a junction with Ashley River channel, thence 24 feet to off the Battery. The channels are well marked by lighted ranges and other aids to navigation. Charleston Entrance Lighted Buoy C (32°37'05"N., 79°35'30"W.) is about 15 miles southeast of Charleston Light and is equipped with a racon.

### Anchorages

(149) The principal anchorage for deep-draft vessels is in the triangle westward of the junction of Rebellion Reach of the main channel with South Channel. (See **110.173**, chapter 2, for limits and regulations.)

### Dangers

(150) The danger area of a former World War II minefield is off the entrance to Charleston Harbor. The area is open to unrestricted surface navigation but all vessels are cautioned not to anchor, dredge, trawl, lay cables, bottom, or conduct any similar type of operation because of residual danger from mines on the bottom. An **"anchor at your own risk"** anchorage, within the danger area, is on the north side of the entrance channel about 7 miles NW of Charleston Entrance Lighted Whistle Buoy C. The rectangular anchorage is enclosed by the following points:

(151) 32°42.9'N., 79°42.8'W.;

(152) 32°41.3'N., 79°39.3'W.;

(153) 32°39.9'N., 79°40.2'W.; and

(154) 32°41.6'N., 79°43.7'W.

(155) The area has been searched on many occasions and no unexploded ordnance has been discovered. Vessels have routinely anchored in this offshore anchorage for many years without mishap.

(156) **A regulated navigation area** extends northeastward and southeastward along the northern side of the entrance channel from Charleston Entrance Channel Lighted Buoy 16. (See **165.714**, chapter 2, for limits and regulations.)

### Marine Protected Area (MPA)

(157) **Charleston Bump Closed Area-Highly Migratory Species**, portion of Exclusive Economic zone (EEZ) extends from southern NC to southern GA near Jeckyll Island.

### Caution

(158) Vessels approaching Charleston Harbor must guard against an inshore set which may amount to a knot or more due to indraft of current into the various

inlets. In this area, preceding a northeasterly or following a southerly gale, a hazy atmospheric condition may be encountered, which results in low visibility of lights even in fine weather when it is clear overhead. During the periods when this condition prevails, it is reported that excessive inshore sets have been experienced.

(159) **Rattlesnake Shoal,** 3 miles offshore and the same distance east-northeastward of the north jetty at the entrance to Charleston Harbor, is about 2 miles long east and west; its least depth is 10 feet. A buoy is E of the outer end of the shoal.

(160) Two unmarked rectangular drill minefields are about 8 miles northward and 5 miles north-northeastward of the sea buoy (Charleston Entrance Lighted Buoy C). Depths of 30 feet were reported in the northern minefield in 1969. A lighted buoy is about 1.5 miles southeastward of the northern minefield and marks a wreck and fish haven area. There are several drill minefields westward and southwestward of the sea buoy. There are also several unmarked charted dangers inside the sea buoy; caution is advised in this area.

### Routes

(161) From northward, the safer approach to Charleston Harbor, and the one generally used by deep-draft vessels, is outside Frying Pan Shoals Lighted Buoy 16. The course should be shaped west-southwesterly to pick up Cape Romain Shoal Buoy 6CR, and then the Charleston sea buoy. From southward, a northeast course, from a point about 3 miles southeastward of Savannah Light, will lead to the Charleston sea buoy.

### Currents

(162) Off the entrance to Charleston Harbor the tidal currents are rotary with velocities of about 1 knot. Near the entrance to the jetties the current sets fair with the channel at strengths of flood and ebb and can be expected to set across the channel with a velocity of about 0.2 knot about 3 hours after strength of flood and ebb, setting northeastward and southwestward, respectively.

(163) It is reported that tide rips, hazardous to small craft, may be encountered off the jetties when wind and current are opposed.

(164) It is reported that with a west-northwesterly storm the ebb current off Fort Sumter and north of Drum Island attains a velocity of about 4 knots.

(165) In the channel between the west end of the south jetty and the submerged jetty, the average velocities of the current at strengths of flood and ebb are about 1.2 knots and 2.8 knots, respectively.

(166) Daily predictions for Charleston Harbor, off Fort Sumter, are contained in the Tidal Current Tables, and predictions for a number of other locations in the harbor and tributaries can be obtained through the use of Table 2 of the Tidal Current Tables. Tidal Current Charts are available for Charleston Harbor, including the entrance thereto, and Wando, Cooper, and Ashley Rivers.

### Weather, Charleston and vicinity

(167) The temperate climate is modified by its exposure to the ocean. This is most noticeable in winter, when minimum temperatures are often 10° to 15°F (5.6° to 9.4°C) warmer on the peninsula than at the airport. Summers are warm and humid although sea breezes keep 100°F (37.8°C) readings a rarity. This is the rainiest season but most of the precipitation falls as brief, heavy showers or thundershowers. Prevailing winds are generally southerly in summer and spring, compared to the more frequent northerlies of fall and winter. Gales are infrequent and are most likely associated with local spring storms or hurricanes, which may also produce severe thunderstorms and tornadoes. From late September through early November weather is often sunny and pleasant except for the threat of a hurricane, which also exists in summer.

(168) The average temperature at Charleston is 66°F (18.9°C) with an average high of 76°F (24.4°C) and an average low of 55°F (12.8°C). January is the coolest month with an average high of 59°F (15°C) and an average low of 38°F (3.3°C). July is the warmest month with an average high of 90°F (32.2°C) and an average low of 72°F (22.2°C). The warmest temperature on record is 104°F (40°C) recorded in July 1986 and the coolest temperature on record is 6°F (-14.4°C) recorded in January 1985. June, July, and August have each recorded temperatures in excess of 100°F (37.8°C) while each month, November through April, has recorded temperatures below freezing. Temperatures above 90°F (32.2°C) can be expected on 53 days during any given year while temperatures below 32°F (0°C) can be expected on 33 days during any given year.

(169) The average annual precipitation of Charleston is 52 inches (1,321 mm). Thanks to an abundance of thunderstorms, averaging 14 each year during July, July is the wettest month with 7.25 inches (184.2 mm). November is the driest month averaging about 2.5 inches (63.5 mm). Snowfall is rare in Charleston averaging less than one inch (25.4 mm) in any given year. However snow has fallen in each month, November through March. The greatest snowfall in a 24-hour period was 6 inches (152.4 mm) in December 1989.

(170) Charleston Harbor offers few of the characteristics of a haven during hurricane force winds. The following recommendations along with more detailed information can be found in the **Hurricane Havens Handbook for the North Atlantic Ocean** mentioned in chapter 3. Large ships should evade at sea or seek shelter elsewhere when a hurricane threatens. During a severe tropical storm (50-63 knots), some moorings along the Cooper River, Shipyard Creek and Town Creek may be adequate unless the vessel has a large sail area. While anchorage for deep-draft vessels is available in the triangle westward of the confluence of Rebellion Reach (of the main channel) with South Channel, use of this anchorage is not recommended because of the restricted

scope while riding at anchor, the hazards of collision, and the difficulty of leaving if necessary.

(171) The topography of the entire harbor area is nearly flat and at sea level provides little shelter from wind and tide. The highest accurate storm tide on record was 11.2 feet (3.4 m) above mean low water in the August 1893 storm. Smaller vessels, fishing boats and sailing craft should stay fast or seek shelter along the west side of the Cooper River, northward of the Battery.

(172) Since 1842, 58 tropical storms have come within 50 miles (93 km) of Charleston, 34 of these since 1950. The most noteworthy of recent memory was Hurricane Hugo in 1989. Hugo made landfall near Sullivan's Island, north of Charleston, early in the morning of September 22nd. Highest sustained winds in Charleston were 68 knots with gusts to 85 knots, however local reports noted gusts as high as 94 knots.

(173) The National Weather Service Office is at the Municipal Airport about 12 miles outside of the city. **Barometers** may be compared there. (See Appendix B for the **Charleston climatological table.)**

### Pilotage, Charleston

(174) Pilotage is compulsory for all foreign vessels and for all U.S. vessels under register in the foreign trade. This compulsory pilotage is regulated pursuant to 46 USC 8501 and Title 54, Chapter 15 of the 1976 South Carolina Code, as amended, and Chapter 136 of the South Carolina Code of Regulations. The State pilotage regulatory agency is the Commissioners of Pilotage, Port of Charleston, P.O. Box 20096, Charleston, SC 29413; telephone 843-577-8659. Pilotage is optional for U.S. vessels in the coastwise trade which have on board a pilot licensed by the Federal Government pursuant to the Federal pilotage requirements of 46 USC 8502 and 46 CFR 15. Both Federal and State pilotage is available from the Charleston Branch Pilots Association, 6 Concord Street, Charleston, SC 29401, telephone 843-577-6695, FAX 843-577-0632. The Association maintains two offshore pilot boats, the FORT SUMTER and the FORT MOULTRIE. They also have two boats, the SIS and the PALMETTO STATE, used primarily as a shuttle and for other harbor work. These four boats have black hulls and aluminum superstructures, and have the word "PILOT" on their sides. Pilots board vessels day or night from the pilot boats in the vicinity of the sea buoy Charleston Entrance Lighted Buoy C (32°37'05"N., 79°35'30"W.). Vessels are requested to maintain a speed of 8 to 10 knots and provide a ladder 2 meters above the water on the leeward side. The pilot boats are equipped with radar and maintain radiotelephone communications on VHF-FM channels 13, 14, 16, and 18A. The pilot office at Charleston monitors these channels on a 24-hour basis. Pilots may be obtained directly by telephone, FAX (above), through the Charleston Marine Operator, or by prior arrangement through ships' agents. The usual practice is for ship agents to FAX orders directly to the pilot office, at 843-557-0632. At least 3 hours advance notice for orders of arrival at the sea buoy and departure from the port is required.

(175) Public vessels such as Navy and Coast Guard ships are exempt from pilotage requirements but their commanding officers frequently request pilots in an advisory capacity. When pilots are taken, naval vessels may use either federally licensed civilian employees of the Navy or pilots from the Charleston Branch Pilots Association as pilots on their vessels. The Port Services Division of U.S. Naval Station, Charleston, coordinates pilotage for naval vessels through the two groups of pilots.

### Towage

(176) Tugs are required for docking and undocking. Tugs up to 5,100 hp are available at all hours by arrangements through ships' agents. They usually meet vessels bound for Charleston proper at or near the Customhouse Reach, and vessels bound for North Charleston at or near North Charleston Reach. Tugs can also be engaged for salvage or deep-sea towing.

### Quarantine, customs, immigration, and agricultural quarantine.

(177) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(178) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) The quarantine office is in the Federal Building. There are several large public and private hospitals in Charleston.

(179) Charleston is a **customs port of entry.**

### Coast Guard

(180) A **Sector Office** is at the Coast Guard Station (32°46.4'N., 79°56.6'W.) on the east side of the Ashley River. (See Appendix A for address.)

### Harbor regulations

(181) The Coast Guard exercises jurisdiction over the Port of Charleston through the Captain of the Port. The South Carolina State Ports Authority exercises jurisdiction over the authority's facilities through its Executive Director at the headquarters building, located at 176 Concord Street. The ports authority berthing office is manned at all times and can be reached at 843-557-8659 or call Port Harbormaster on VHF-FM channel 16. Additional information can be obtained through the State Ports Authority's Harbormaster at 843-577-8192 or VHF-FM channel 16, call sign, KBP 636. The Commissioners of Pilotage, Port of Charleston, have issued policy guidelines for safe vessel movement to the pilots regulated by that State agency in the Commissioners of **Pilotage Policies** and **Procedures Manual**. Chapter 136 of South Carolina State Code of Regulations contains regulations concerning vessel traffic restrictions, docking and undocking.

**Wharves**

(182) Only the major facilities at Charleston and North Charleston are described. These facilities are all northward of the Battery along the west side of Cooper River and Town Creek, and in Shipyard Creek and the east bank of the Wando River. All of the berths have highway connections and most have either direct or beltline rail connections with the Class I or Class II railroad system. Water is also available at most berths. General cargo at the port can be handled by ship's tackle or special equipment which is available at most facilities. Special equipment, if available, is mentioned in the description of the particular facility.

(183) There are many smaller facilities in Charleston which are used by barges and small vessels, and as vessel-repair berths; these are not described. For a complete description of the port facilities, see Port Series No. 13, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(184) **Facilities at Charleston proper, along the west side of Cooper River and Town Creek, northward of the Battery** (32°46'08"N., 79°55'44"W.):

(185) **State Pier 2, Union Pier**: 0.75 mile north of the Battery; 2,620 feet of berthing space with dolphin off of the south end; 35 feet alongside; deck height, 12 feet; handles general cargo and heavy machinery; passenger terminal; owned and operated by South Carolina State Ports Authority.

(186) **State Pier 8, Columbus Street Terminal:** about 1.4 miles north of the Battery; 3,440 feet of berthing space; 40 feet alongside; deck height, 12 feet; three gantry cranes to 125 tons; handles general and containerized cargo including heavy lift items; owned and operated by South Carolina State Ports Authority. Three container cranes are also available.

(187) **State Pier 9:** joining State Pier 8 to the northward; marginal type wharf with 437-foot face and 30-foot apron; 35 feet alongside; deck height, 12 feet.

(188) **Allied Terminal Wharf and Barge Dock:** 3.4 miles northward of the Battery, just below the entrance to Shipyard Creek; offshore wharf with 78-foot face, 1,000 feet of berthing space with mooring dolphins; 40 feet alongside; deck height, 10 feet; handles asphalt and petroleum products; bunkering vessels.

(189) **Facilities in Shipyard Creek, on the west side of Cooper River about 3.8 miles northward of the Battery**:

(190) **Kinder-Morgan Bulk Terminal**: south side of Shipyard Creek, just inside the entrance; marginal wharf with 390-foot face; 44 feet alongside; deck height, 14 feet; one 16-ton electric crane; handles miscellaneous liquid and dry bulk commodities including coal and stone.

(191) **Kinder-Morgan Bulk Terminal** : west side of Shipyard Creek about 400 yards westward of Shipyard River Terminal Wharf; 130-foot face, berthing for 660-foot vessels with dolphins; 44 feet alongside; deck height, 13 feet; handles petroleum products and bunkering vessels.

(192) **Facilities at North Charleston, along the west side of Cooper River, northward of the Battery**:

(193) **Thomas Cement Terminal:** (32°52'47"N., 79°58'05"W.): L-shaped offshore wharf with 250-foot face, 550 feet with dolphins; 40 feet alongside; deck height, 11.5 and 16.5 feet; handles petroleum products.

(194) **AlcoaTerminal Wharf**: about 250 yards of northward of Koch Terminal Wharf; 520-foot face, 700 feet of berthing space with dolphins; 40 feet alongside; deck height, 14 feet; handles liquid chemicals and alumina.

(195) **Shell Oil Wharf**: about 550 yards northward of Koch Terminal Wharf; offshore wharf with 142-foot face, 257 feet of berthing space with dolphins; 40 feet alongside; deck height, 13 feet; handles petroleum products.

(196) **Marathon Petroleum Co. Wharf**: about 300 yards northward of Texaco Wharf; offshore wharf with 50-foot face, 275 feet with dolphins; 40 feet alongside; deck height, 14 feet; handles petroleum products .

(197) **Amerada Hess Corp. North Terminal**: about 200 yards northward of Marathon Petroleum Co. Wharf; offshore wharf with 68-foot face, 600 feet of berthing space with mooring dolphins; 40 feet alongside; deck height, 12 feet; handles petroleum products.

(198) **Westvaco Corp. Wharf**: about 0.65 mile northward of Amerada Hess Corp. North Terminal; marginal type wharf with 480-foot face; 655 feet usable with dolphins; 40 feet alongside; deck height, 12 feet; handles paper products.

(199) **State Pier 15, South Carolina State Ports Authority North Charleston Terminal**: joining Westvaco Corporation wharf to the northward; marginal wharf with 2,460-foot face; 40 feet alongside; deck height, 12 feet; six container cranes, container handlers and toploaders; handles general cargo, RO/RO, and frozen products; owned and operated by South Carolina State Ports Authority.

(200) **South Carolina State Ports Authority Grain Wharf**: about 0.4 mile northward of State Pier 15; marginal type wharf with 380-foot face; 40 feet alongside; deck height, 12 feet; handles dry bulk cargo; operated by South Carolina Farm Bureau Marketing Association.

(201) **Naval Weapons Station TC Dock**: about 0.2 mile northward of the South Carolina State Ports Authority Grain Wharf: marginal type wharf with a 1,500-foot face; 40 feet alongside. (For further information contact the operator.)

(202) The piers at the former Navy Base, and Navy Yard are now under the operation of other government agencies and private corporations. The Maritime Administration uses several of these piers as lay berths for their ships. The U.S. Coast Guard also berths vessels at these piers. Pier "Zulu" is used by commercial vessels for cargo handling. Detyens Shipyard operates drydock facilities and berths at the former Navy Yard.

(203) **Cargo facilities on east bank of Wando River, east of Cooper River**:

(204) **WandsWelch Terminal**: about 1.7 miles north of Drum Island; 3,800-foot face; 40 feet alongside; deck height, 15½ feet; nine 40-long ton container cranes, container handlers and toploaders; handles containerized general cargo; operated by South Carolina State Ports Authority.

### Supplies

(205) All types of marine supplies and provisions can be obtained in Charleston. Water is available at most of the berths; diesel fuel is available by barge or truck.

### Repairs

(206) Detyens Shipyard, Inc., offers drydocking services at its facilities at the former Navy Yard. Another commercial repair facility with a 1,000-ton capacity marine railway is on the south side of Stono River on the Intracoastal Waterway at Mile 476.4. This facility is discussed in chapter 12.

(207) Several shops, on and off the waterfront, can make above-the-waterline hull repairs, and repairs to gasoline and diesel engines and electronic equipment anywhere in the harbor; the largest shafts that can be produced are 30 feet by 48 inches.

(208) Wrecking and salvage gear is available at Charleston for normal operations and special equipment can be brought in.

(209) Repair facilities for small craft are on the Wando and Stono Rivers.

### Communication

(210) The port of Charleston is served by the Class I and the Class II railroad system, which connect with most of the wharves either directly or through three beltline railroads. A number of steamship lines connect the port with principal foreign ports; frequent sailings are maintained by most of the lines. The Municipal Airport 12 miles northwestward of the Battery is served by four commercial airlines. Truck and bus lines serve the port. There are excellent highway connections with Interstate Route 26 and U.S. Routes 17, 701, 52, 52A, and 78.

## Chart 11524

(211) **Ashley River** empties into Charleston Harbor from the northwestward on the southwest side of Charleston.

### Channels

(212) A dredged channel in Ashley River leads from a point about 1 mile southeastward of the Battery (32°46'08"N., 79°55'44"W.) to a turning basin about 5.8 miles above the Battery. In 2010, the controlling depth was 14 feet to the U.S. Route 17 bascule highway bridges, thence 13 feet to the turning basin and in the turning basin. About 1.0 mile above the U.S. Route 17 bascule bridges, trestle ruins extend from the west side of the channel to about midchannel; extreme caution is advised. Local knowledge is advised for vessels navigating above the turning basin. The river is marked by a lighted approach range, and by buoys and daybeacons to the fixed highway bridge about 8.4 miles above the Battery.

(213) **Coast Guard Sector Charleston** is on the east side of Ashley River, about 0.9 mile above the Battery.

(214) A municipal marina is on the northeast side of the Ashley River 1.3 miles above the Battery and 0.3 mile north of the entrance to **Wappoo Creek**, which is a part of the Intracoastal Waterway. Electricity, gasoline, diesel fuel, water, ice, pump-out station, launching ramp, marine supplies, and wet storage are available. In 2003, depths of 13 feet were reported alongside the berths. A marina, about 600 yards northeast of the municipal marina, has electricity, gasoline, diesel fuel, water, ice, pump-out station, marine supplies, wet storage and engine repairs available. In 1983, good anchorage for small craft was reported on the east side of the river just northward of the municipal marina.

(215) A **special anchorage area** is across the river from the municipal marina. (See **110.1 and 110.72d,** chapter 2, for limits and regulations.)

(216) **A slow, no-wake speed zone** is marked by a buoy just south of the municipal marina.

### Bridges

(217) Several bridges cross the Ashley River above the Battery. A fixed bridge, with a clearance of 56 feet crosses about 1.5 miles above the Battery. The two U.S. Route 17 highway bascule bridges, 100 yards apart, cross about 2 miles above the Battery. The first has a clearance of 18 feet and the second, 14 feet. State Route 7 highway fixed bridge, 6.2 miles above the Battery, has a clearance of 50 feet at the center span. The overhead power cable 0.4 mile above the bridge has a clearance of 70 feet at the two main spans. The fixed highway bridge about 8.4 miles above the Battery has a clearance of 35 feet. The railroad bridge, 10 miles above the Battery, has a bascule span with a clearance of 3 feet. The overhead power cable just below this bridge has a clearance of 74 feet. (See **117.1 through 117.59 and 117.915**, chapter 2, for drawbridge regulations.)

(218) An overhead power cable with a clearance of 70 feet crosses the Ashley River about 0.6 mile below Greggs Landing.

(219) **Shem Creek,** on the lower east side of Charleston Harbor, is entered from the south through **Mount Pleasant Channel,** a marked dredged channel that leads to a terminal basin about 1.9 miles above the channel entrance and just below the Route 17 highway bridge at **Mount Pleasant**. In 2011, the controlling depth was 5.5 feet to the highway bridge. Shem Creek can be approached from westward via unmarked Hog Island Channel, used by local boatmen only at high water. A marina about 1.2 miles above the dredged channel entrance has gasoline, water, ice, and a launching ramp. Other wharves on the creek are used by fishing vessels.

U.S. Route 17 highway bridge has a 36-foot fixed span with a clearance of 12 feet.

(220) **Cooper River** enters Charleston Harbor from northward on the eastern side of Charleston; the main channel of the harbor extends several miles up this river. **Drum Island** is 2 miles above the mouth of the river. The channel on the westerly side of this island is known as **Town Creek.**

(221) A U.S. Government degaussing range, marked by lighted and unlighted dolphins, crosses the channel between **Shutes Folly Island** and Charleston, about 0.3 mile northward of the Battery. A **restricted area** has been established in the immediate vicinity of the range. (See **334.470**, chapter 2, for limits and regulations.)

### Bridges

(222) Two fixed bridges, about 5.7 miles above the mouth and parallel to each other, span Town Creek, Drum Island, and Cooper River on the east side of Charleston. The authorized clearances for both bridges are: Town Creek, 65 feet for a width of 250 feet; Cooper River, 186 feet for a width of 1,000 feet.

(223) The I-526 fixed highway bridge has a clearance of 155 feet and crosses Cooper River, at Filbin Creek Reach, about 6.7 miles above the two fixed bridges. An overhead power cable crosses Cooper River just N of the highway bridge with a least clearance of 104 feet. The I-526 fixed highway bridge over the Wando River has a vertical clearance of 138 feet and crosses the Wando River about 3.5 miles abut the junction of the Cooper and Wando Rivers.

(224) **Shipyard Creek** joins Cooper River from the west 3.8 miles above the Battery. There is considerable traffic in oil, bulk fertilizer materials, and ore on this waterway.

(225) **Facilities of the U.S. Government** extend along the west side of the Cooper River from 4 to 8 miles above the Battery. The large water tank, red and white, is conspicuous at the facility.

(226) **Restricted areas** are in the northern portion of Shipyard Creek, and in the Cooper River at the U.S. Government facility. (See **334.460 and 334.470**, chapter 2, for limits and regulations.)

(227) **North Charleston,** just north of the government facility, is the site of several oil wharves, a general cargo terminal, several bulk commodity wharves, and the U.S. Army Storage Activity; these facilities have been described earlier under Wharves.

## Chart 11527

(228) In 1977, depths of 20 feet or more were available in Cooper River from the upper limit of the Navy-maintained channel about 3.4 miles above Goose Creek to **The Tee,** 26 miles above the Battery. There is ship traffic to and from the Amoco Terminal about 14 miles above the Battery, ship movement is subject to certain restrictions by the Pilots' Association. There is daylight-only ship traffic upstream as far as the Nucor Steel Terminal about 18.5 miles above the Battery. These ships are limited in size to 580 feet long with a 25 foot draft, and subject to certain tidal and current restrictions by the Pilots' Association. This section of the river is bordered by marshland, with occasional bluffs 15 to 20 feet high. A **restricted area** is off the U.S. Naval Ammunition Depot, on the west side of Cooper River about 10 miles northward of the Battery. (See **334.460**, chapter 2, for limits and regulations.)

(229) An overhead power cable with a clearance of 75 feet crosses Cooper River about 21.1 miles above the Battery.

(230) In **East Branch** the reported controlling depth in 1983 was 7 feet to **Pompion Hill Chapel,** 6 miles above The Tee. The channel is narrow and follows the ebbtide bends. In **West Branch,** the reported controlling depth in 1975 was 15 feet to the CSX bridge 4 miles above The Tee. The first bend west of The Tee is a bad spot; deep water is on the inner side of the bend. The railroad bridge has a swing span with a channel width of 30 feet and a clearance of 8 feet. (See **117.1 through 117.59 and 117.925**, chapter 2, for drawbridge regulations.) Extreme caution is necessary at the bridge; the current is strong, and about 40 minutes is needed to open the draw. An overhead power cable at the bridge has a clearance of 85 feet. The mean range of tide at the bridge is 4.2 feet.

(231) About 12 miles above The Tee, a tailrace canal enters West Branch from **Lake Moultrie.** The distance along the canal from West Branch to the lake is about 4 miles. Two bridges cross the canal with minimum clearance of 50 feet. A marginal wharf 200 feet long is on the west side of the canal about a mile above the junction with West Branch. The wharf has gasoline available; in 1987, a reported controlling depth of 3 feet was alongside. In 1987, very strong currents were reported to exist in the canal.

(232) A depth of about 11 feet is available from the railroad bridge over West Branch to the tailrace canal and thence to the dam. The lock in the dam has a length of 180 feet, a width of 60 feet, and a depth over the miter sills of 12 feet; the vertical lift is 75 feet. A draft of 14 feet has been taken to the lake with favoring tides. Light-draft vessels can navigate to Columbia, S.C., by way of Lake Moultrie, Lake Marion, and the Congaree River. The last 18 miles are treacherous because of the twisting channel and varying water levels caused by a dam above Columbia. The lakes are fouled by submerged trees. Navigation should not be attempted by strangers.

## Charts 11524, 11526

(233) **Wando River** empties from the northeast into Cooper River eastward of Drum Island.

(234) Wando River Terminal, previously described, is on the east side of Wando River about 1.7 miles above Drum

Island. The channel to the facility is marked by lighted buoys.

(235) A fixed highway bridge with a clearance of 138 feet is about 3.5 miles above Drum Island.

(236) **Nowell Creek** empties into the west side of Wando River, about 4.5 miles above Drum Island. The creek, about 5.5 miles above its mouth, joins **Beresford Creek.** Together they form a connection between Wando River and Cooper River. In 1973, shoaling to 2 feet was reported on the east side of the entrance to Nowell Creek.

(237) An overhead power cable with a clearance of 145 feet crosses Wando River about 8.9 miles above Drum Island.

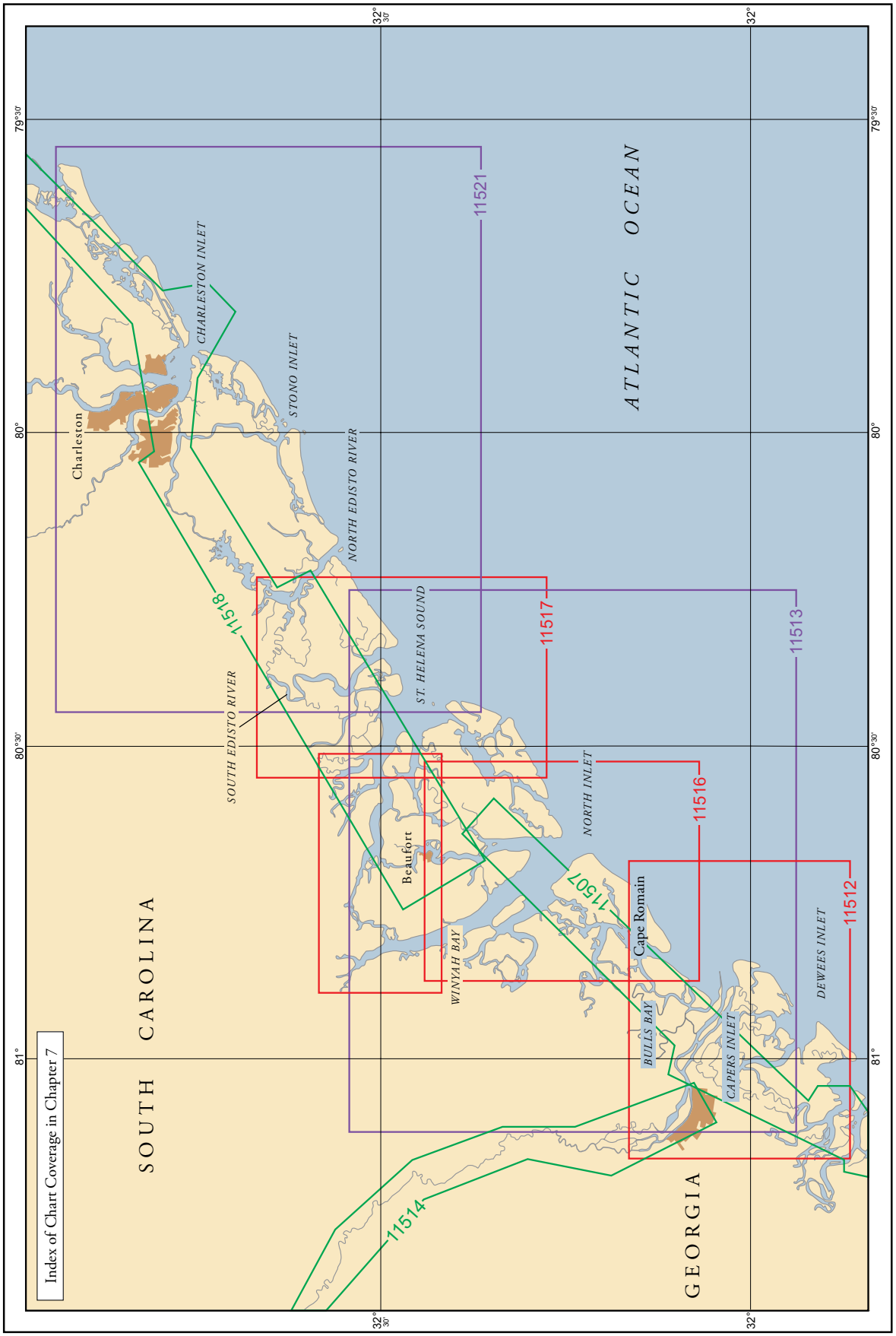
(238) **Cainhoy** is a town on Wando River about 9 miles above Drum Island. Depths of about 17 feet can be taken to Cainhoy and thence, with local knowledge, 11 feet to the mouth of Guerin Creek 1.5 miles above State Route 41 highway bridge at Cainhoy, thence 8 feet for another 3.4 miles, thence 2 feet to Wards Bridge. The channel is marked as far as Cainhoy by buoys and unlighted ranges.

(239) State Route 41 bridge and an overhead power cable cross the river about 0.4 mile above Cainhoy; the highway bridge has a swing span with a clearance of 6 feet and the overhead power cable has a clearance of 85 feet. (See **117.1 through 117.59 and 117.939**, chapter 2, for drawbridge regulations.)

(240) Wando River continues for about 7 miles to **Wards Bridge** at the head of navigation. An overhead power cable crossing the river about a mile south of the bridge has a clearance of 30 feet. **Guerin Creek** flows into Wando River from the northeast about 2 miles above Cainhoy. **Guerin Bridge,** a fixed structure at the head of navigation, is some 3 miles above the mouth of the creek.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11536 | Cape Fear | 33°51'N/77°58'W | 5.0 | 4.7 | 0.2 |
| 11536 | Lockwoods Folly Inlet, Cape Fear River | 33°55'N/78°14'W | 4.7 | 4.4 | 0.2 |
| 11536 | Southport, Cape Fear River | 33°55'N/78°01'W | 4.7 | 4.4 | 0.1 |
| 11536 | Shallotte Inlet (Bowen Pt.) | 33°55'N/78°22'W | 5.1 | 4.8 | 0.2 |
| 11531 | Cape Romain | 33°01'N/79°21'W | 5.2 | 4.9 | 0.2 |
| 11534 | Orton Point, Cape Fear River | 34°03'N/77°56'W | 4.6 | 4.3 | 0.1 |
| 11534 | Myrtle Beach Airport, ICWW | 33°49'N/78°43'W | 3.3 | 3.0 | 0.2 |
| 11534 | Socastee Bridge, ICWW | 33°42'N/79°00'W | 2.4 | 2.2 | 0.1 |
| 11534 | Myrtle Beach, Springmaid Pier | 33°39'N/78°55'W | 5.6 | 5.2 | 0.2 |
| 11534 | Oaks Creek, 0.5 mi. above ent., Murrells Inlet | 33°32'N/79°03'W | 4.8 | 4.5 | 0.2 |
| 11532 | Georgetown Lighthouse, Winyah Bay | 33°13'N/79°11"W | 4.4 | 4.1 | 0.2 |
| 11534 | Sunset Beach Pier | 33°52'N/78°30'W | 5.4 | 5.0 | 0.2 |
| 11535 | Winyah Bay entrance (South Jetty) | 33°11'N/79°09'W | 5.1 | 4.8 | 0.2 |
| 11535 | Myrtle Beach, Springmaid Pier | 33°39'N/79°11'W | 5.6 | 5.2 | 0.2 |
| 11532 | Clambank Creek, Goat I., North Inlet | 33°20'N/79°12'W | 5.2 | 4.9 | 0.2 |
| 11532 | Minim Creek ent., ICWW, North Santee Bay | 33°12'N/79°17'W | 4.5 | 4.2 | 0.2 |
| 11532 | Georgetown, Sampit River ent. | 33°22'N/79°17'W | 4.1 | 3.9 | 0.1 |
| 11532 | Cedar Island, North Santee Bay | 33°08'N/79°15'W | 4.7 | 4.4 | 0.2 |
| 11531 | McClellanville, Jeremy Creek, Bulls Bay | 33°05'N/79°28'W | 5.4 | 5.0 | 0.2 |
| 11531 | Moores Landing, ICWW, Sewee Bay | 32°56'N/79°39'W | 5.6 | 5.2 | 0.2 |
| 11531 | North Dewees Island, Capers Inlet, | 32°51'N/79°42'W | 5.3 | 4.9 | 0.2 |
| 11531 | South Dewees Island, Dewees Inlet | 32°50'N/79°44'W | 5.5 | 5.1 | 0.2 |
| 11527 | Goose Creek entrance, Cooper River | 32°55'N/79°57'W | 5.9 | 5.6 | 0.2 |
| 11524 | Charleston, Customhouse Wharf | 32°47'N/79°56'W | 5.8 | 5.4 | 0.2 |
| 11524 | Fort Sumter, Charleston Harbor | 32°45'N/79°53'W | 5.6 | 5.3 | 0.2 |
| 11521 | Rockville, Bohicket Creek, N. Edisto River | 32°36'N/80°12'W | 6.3 | 6.0 | 0.2 |
| 11521 | Seabrook, Ashepoo River, St. Helena Sound | 32°31'N/80°24'W | 6.7 | 6.4 | 0.2 |
| 11521 | Edisto Beach, Edisto Island | 32°30'N/80°18'W | 6.3 | 6.0 | 0.2 |
| 11521 | Otter Island, St. Helena Sound Entrance | 32°29'N/80°25'W | 6.6 | 6.2 | 0.2 |
| 11523 | Shem Creek, Charleston Harbor | 32°48'N/79°53'W | 5.7 | 5.4 | 0.2 |
| 11523 | Isle of Palms Pier | 32°47'N/79°47'W | 5.5 | 5.1 | 0.2 |
| 11523 | Breach Inlet, Isle of Palms | 32°47'N/79°49'W | 5.5 | 5.1 | 0.2 |
| 11523 | Ben Sawyer Bridge, ICWW | 32°46'N/79°53'W | 5.6 | 5.2 | 0.2 |
| 11524 | Cainhoy, Wando River | 32°45'N/79°53'W | 5.6 | 5.3 | 0.2 |
| 11527 | Quinby Creek, bridge, East Branch, Cooper River | 33°06'N/79°49'W | 3.2 | 3.0 | 0.3 |
| 11527 | Pimlico, West Branch, Cooper River | 33°06'N/79°57'W | 2.1 | 1.9 | 0.2 |
| 11527 | Clouter Creek, north entrance, Cooper River | 33°54'N/79°56'W | 6.0 | 5.6 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011


Index of Chart Coverage in Chapter 7
SOUTH CAROLINA
GEORGIA
ATLANTIC OCEAN
Charleston
CHARLESTON INLET
STONO INLET
NORTH EDISTO RIVER
SOUTH EDISTO RIVER
ST. HELENA SOUND
Beaufort
WINYAH BAY
NORTH INLET
Cape Romain
BULLS BAY
CAPERS INLET
DEWEES INLET
11521
11518
11517
11513
11516
11507
11512
11514
79°30'
80°
80°30'
81°
32°30'
32°

# Charleston Harbor to Savannah River

## Charts 11480, 11521, 11513

(1) This chapter describes the coastline from Charleston Harbor to Savannah River. The coast, low and timbered, trends in a southwesterly direction for 65 miles and is broken by St. Helena, Port Royal, and Calibogue Sounds, and by numerous inlets from which there is access to the interior by way of the rivers emptying into them. Shoal water extends 3 to 8 miles offshore.

(2) Numerous fish havens, some marked by private buoys, are from 3 to 12 miles off the coasts of South Carolina and Georgia.

(3) This section of the coast, due to its low relief, presents no good radar targets.

(4) Included in this chapter are the deepwater ports of Savannah and Port Royal; the fishing and small-craft port of Beaufort, SC; Stono, and North Edisto Rivers; the tributary waters of the various sounds of which South Edisto, Coosaw, Beaufort, Broad, and Savannah Rivers are the more important; and several small towns along these waterways.

(5) The section of the Intracoastal Waterway from Charleston to Savannah is described in chapter 12.

### Caution

(6) The areas generally to the east and southeast of Charleston Harbor are used extensively by the U.S. Navy and other military services to conduct various types of surface, subsurface, and aircraft training exercises. The Commander, Submarine Group Six, Charleston, SC, has cognizance of the operating areas through the Charleston Operating Area Coordinator (COAC).

### COLREGS Demarcation Lines

(7) The lines established for this part of the coast are described in **80.712 through 80.715**, chapter 2.

### Weather

(8) A major winter storm track extending east-northeastward from the Gulf of Mexico crosses this coastline. Often these extratropical systems are in a developing stage and intensify after crossing the Gulf Stream in the Atlantic. Therefore, gale force winds are infrequent in these coastal waters; they blow 1 to 3 percent of the time from November through March. Maximum winds for most months are in the 40- to 50-knot range generated by extratropical or tropical storms, and cold fronts in spring. Steep waves are infrequent, but waves of 8 feet (2.4 m) or more can be expected about 15 to 30 percent of the time from November through March. Maximum heights are in the 18- to 25-foot (5 to 8 m) range.

(9) Tropical cyclones are most likely from June through October with a peak threat during September and October. About one to two cyclones threaten this coast in an average year. Many of these storms have recurved and some have traveled across the Gulf states and weakened. However heavy rains, storm tides, strong winds, high waves and even tornadoes are a possibility when a tropical cyclone is near.

(10) Coastal fog can plague the mariner, particularly in late winter and spring when warm air moves in over the still cool, coastal waters. Beyond 50 miles (93 km) the warmer waters of the Gulf Stream tend to inhibit sea fog. In those areas, a midwinter cold air outbreak could produce fog. Visibilities are also restricted in rain and showers.

### North Atlantic Right Whales

(11) North Atlantic right whales are often within 30 miles of the South Carolina and Georgia coasts including the approaches to Charleston and Savannah harbors from November through April. (See **North Atlantic right whales** indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.)

(12) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in a continuous 20-nm Seasonal Management Area between November 1 and April 30. The area is defined as the waters contained by the following points:

(13) A: 34°10.5'N., 77°49.2'W.;

(14) B: 33°56.7'N., 77°31.5'W.;

(15) C: 33°36.5'N., 77°47.1'W.;

(16) D: 33°28.4'N., 78°32.5'W.;

(17) E: 32°59.1'N., 78°50.3'W.;

(18) F: 31°50.0'N., 80°33.2'W.;

(19) G: 31°27.0'N., 80°51.6'W.; thence due west to the shore. (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.)

## Charts 11522, 11521

(20) **Lighthouse Inlet** (32°41.2'N., 79°53.0'W.), between **Morris Island** and **Folly Island** has no channel across the bar; entrance should be attempted only with local knowledge on a rising tide with a smooth sea. In June 1983, the reported controlling depth over the bar and

upstream to **Secessionville** was 3 feet; the inlet is unmarked and used only by local fishermen. Small craft pass into Charleston Harbor by way of **Lighthouse Creek** and also into numerous sloughs north of Folly Island.

(21) **Stono Inlet**, 10 miles southwestward of Charleston Harbor entrance, is entered over a shifting bar between Folly Island and **Kiawah Island**. A lighted gong buoy is southward of the entrance. The inlet is subject to continual change and should not be attempted without local knowledge. The entrance buoys are not charted, because they are frequently shifted in position to mark the best water. Local fishermen use the inlet.

(22) A fish haven, marked by a buoy and covered 15 feet, is in about 32°29.0'N., 80°00.3'W., about 5.6 miles southwestward of the drill minefield.

(23) **Stono River**, which joins Stono Inlet from northward, is of little commercial importance except in its upper reach above **Elliott Cut**, where it forms part of the Intracoastal Waterway. In 2005, the reported controlling depth was 8.5 feet from inside the inlet bar for about 13 miles to a junction with the Intracoastal Waterway at Elliott Cut. Vessels usually enter the river by way of the waterway from Charleston. In the summer, numerous pleasure craft use Stono River and Folly River to reach Folly Beach. The highway bridge about a mile below Elliott Cut has a fixed span with an authorized clearance of 65 feet. An overhead power cable about 0.95 mile below the bridge has a clearance of 91 feet at the center of the river.

(24) A marina on the west side of Stono River, just N of the highway bridge, provides berths with electricity, gasoline, diesel fuel, water, ice, marine supplies, pumpout station and wet storage. In 2009, 9 feet was reported alongside.

(25) **Folly River** flows into Stono Inlet from the northeast and **Kiawah River** from the west. Both are relatively unimportant. Folly River is used by pleasure craft and local fishermen desiring to reach Folly Beach. A dredged channel, marked by lighted and unlighted buoys, leads about 2.3 miles upriver from the junction with Stono River at **Bird Key**. (See Notice to Mariners and latest edition of charts for controlling depths.) The dredged channel is subject to continual change. Local knowledge is advised when transiting the area. On the southeast side of the river about 2 miles above the entrance, a seafood plant has diesel fuel, water, ice, and marine supplies. State Route 171 highway bridge about 3.1 miles above the entrance has a fixed span with a clearance of 10 feet. An overhead power cable close eastward of the bridge has a clearance of 46 feet. **Folly Creek** enters Folly River from the north about 2.7 miles above the mouth. State Route 171 highway bridge about 2.9 miles above the creek mouth has a fixed span with a clearance of 10 feet. An overhead power cable at the bridge has a clearance of 40 feet and another overhead power cable 0.4 mile above the bridge has a clearance of 48 feet.

(26) **North Edisto River**, about 10 miles southwestward of Stono Inlet and 20 miles southwestward of Charleston Harbor entrance, is of little commercial importance and rarely used. Shoals extend offshore from the entrance as much as 3 miles and form a shifting bar. Flats, which bare at low water and are continually changing in character, are on both sides of the entrance; caution is advised. In 1991, the reported controlling depth over the bar was 10 feet. The entrance is marked by a lighted whistle buoy, and the channel by a **314°** lighted range and by buoys which are moved, when practicable, to indicate the best water. The entrance is well defined by breakers. A water tank about 1.7 miles northeastward of the entrance is prominent.

(27) Two tributaries of North Edisto River, **Wadmalaw River** from eastward and **Dawho River** from westward, are part of the Intracoastal Waterway. **Bohicket Creek** entrance is about 2.5 miles above the entrance to North Edisto River. **Rockville**, a town about 1.1 miles above the mouth of Bohicket Creek, has several piers and wharves with 5 to 11 feet of water alongside at which fresh water can be obtained. A marina at Rockville has berths with electricity and 16 feet reported alongside; gasoline, diesel fuel, water, ice, marine supplies, and a 3-ton lift are available. Hull, engine, and radio repairs are available. In 1980, the centerline controlling depth was 9 feet up the creek to Rockville. **Adams Creek,** west of Rockville, has several shrimp-boat piers and wharves with depths of 6 to 9 feet alongside. A boatyard close to the piers, has a marine railway that can handle craft to 75 feet for hull and engine repairs. A 60-ton mobile lift can handle craft to 55 feet for hull and engine repairs. A marina, about 3.3 miles above the mouth of Bohicket Creek, has various services and a reported centerline controlling depth of 6 feet in 1991. **Steamboat Creek** entrance, 6 miles above North Edisto River entrance, is marked by a light and daybeacons.

### Currents

(28) On the bar the direction of the current is generally across the channel. The flood current sets about westward, and the ebb eastward; both have considerable velocity. Inside the bar, in the channel between the breakers, the ebb current is to be guarded against, especially when it sets across the north breakers. Predicted currents for the North Edisto River entrance may be obtained from the Tidal Current Tables.

## Charts 11517, 11521, 11513

(29) The entrance to **St. Helena Sound** is 7 miles wide between **Bay Point,** the southern extremity of **Edisto Island**, on the northeast and **Hunting Island** on the southwest. The 132-foot Hunting Island Light (32°22'32"N., 80°26'16"W.), and the elevated tank on the northern part of Hunting Island make good landmarks. There are several channels through the shoals which extend about 6 miles seaward from the sound entrance. In 1983, the buoyed channel had a reported depth of 15 feet; caution

is advised. The mean range of tide on the bar and in the entrance to the sound is about 6 feet. In 1973, a survey revealed depths of 1 foot to 14 feet less than those charted across the entrance to St. Helena Sound. Caution is advised in navigating this area. In 1992, a partially submerged wreck was 2.0 miles northeast of South Edisto River Approach Lighted Buoy A in about 32°26.0'N., 80°16.0'W.

(30) Most important of the several navigable rivers emptying into the sound are South Edisto, Ashepoo, Coosaw, Morgan, and Harbor Rivers; the first three are links in the route of the Intracoastal Waterway. The **Ashepoo-Combahee-Edisto (ACE) Basin National Estuarine Research Reserve and National Wildlife Refuge** are Marine Protected Areas (MPA) in the central portion of St. Helena Sound.

### COLREGS Demarcation Lines

(31) The lines established for St. Helena Sound are described in **80.712**, chapter 2.

(32) **South Edisto River**, which empties into St. Helena Sound immediately westward of Bay Point, is of little commercial importance. The approach to the river is marked by buoys. The river above its junction with **Dawho River**, about 18 miles above Bay Point, is known as **Edisto River**. **Big Bay Creek** is unmarked and empties into the east side of South Edisto River just above Bay Point. A marina about 0.3 mile above the creek entrance on the south side has transient berths, gasoline, diesel fuel, pump-out, water, ice, and supplies. It has been reported that small craft have run aground at night when making Big Bay Creek from the northward by using the street and house lights on **Edisto Beach** as guides; extreme caution is advised.

(33) **Edisto Beach State Park** is about 2 miles northeastward of Bay Point. A marked channel into South Edisto River, about 3 miles southeastward of Bay Point, has depths of 12 to 16 feet over the ocean bar.

(34) An unmarked fish haven is on the northeast side of South Edisto River about 4.5 miles above Bay Point in about 32°32.3'N., 80°23.3'W.

(35) The Intracoastal Waterway leads through South Edisto River from landcuts at **Fenwick Cut** and **Watts Cut**, about 5.3 miles and 11.3 miles above Bay Point, respectively. This section of the river, between Fenwick Cut and Watts Cut, is marked in accordance with Intracoastal Waterway markings. In 1983, the reported controlling depth from Bay Point to the junction with the Intracoastal Waterway at Fenwick Cut was 10 feet, and from Watts Cut to **Willtown Bluff**, about 20 miles above Bay Point, the reported controlling depth was 10 feet.

(36) The river is usually entered from the Intracoastal Waterway; the entrance from the ocean is rarely used.

### Currents

(37) Currents at the entrance have a velocity of about 2 knots; predictions may be obtained from the Tidal Current Tables. A draft of about 3 feet can be taken for about 8 miles above Willtown Bluff to **Jacksonboro**.

(38) **Ashepoo River**, about 4.5 miles westward of Bay Point, flows into St. Helena Sound from northward on the west side of **Otter Islands**. A highway bridge over the river, 13 miles above the mouth, has a fixed span with a clearance of 20 feet. The side piers of a former swing bridge adjacent westward of the fixed bridge are used as fishing piers. An overhead power cable just westward of the bridge has a clearance of 63 feet, and another overhead power cable 4 miles above the bridge has a clearance of 84 feet. Mariners are advised to navigate with caution, because depths vary greatly in the river.

(39) **Coosaw River**, which enters the head of St. Helena Sound from westward, is important only as a link in the Intracoastal Waterway. The river channel is irregular in depth, partly because of the phosphate dredges which once operated here.

## Chart 11519

(40) **Combahee River**, 3 miles above the mouth of the Coosaw River, had a reported controlling depth of 11.4 feet, in 2001, for a distance of about 9 miles above the entrance. The river is navigable for craft drawing up to 5 feet to U.S. Route 17 highway bridge 20 miles above the entrance. The highway bridge has a fixed span with a clearance of 14 feet. The mean range of tide is 6.4 feet at Fields Point, about 5.6 miles above the mouth of the river, and 4.4 feet at the highway bridge.

(41) **New Chehaw River**, on the north side of the entrance to Combahee River, is unimportant and has no traffic. **Old Chehaw River** enters the Combahee River from northward about 2 miles above New Chehaw River. The town of **Wiggins** is about a mile above the junction of Old and New Chehaw Rivers.

(42) **Bull River** enters Coosaw River from the northward about 5 miles above the latter's mouth. Two miles above its mouth, Bull River divides into **Williman Creek** and **Wimbee Creek,** which pass north and south, respectively, of **Williman Islands** and rejoin 4.5 miles above the lower junction. The upper section of Williman Creek where it rejoins Wimbee Creek is known as **Schooner Channel**.

(43) **Chisolm** is a small town on the south bank of Wimbee Creek about 1.5 miles above the lower junction with Williman Creek. In 1983, the reported controlling depth to Chisolm was 8 feet. A section of a former railroad bridge, now used as a fishing pier, is on the west side of Wimbee Creek, 1 mile above the upper junction with Schooner Channel. An overhead power cable with a clearance of 80 feet crosses the creek at this point. In 1983, the reported controlling depth was 8 feet to the fishing pier by way of Bull River, Williman Creek, and Schooner Channel; between Chisolm and the upper junction with Schooner Channel, Wimbee Creek is nearly dry in places at low water.

(44) **Parrot Creek**, which enters Coosaw River on the south side directly opposite Bull River, is a 2-mile link between Coosaw and Morgan Rivers. The reported controlling depth through the creek was 11 feet in 1994-1999. Daybeacons mark the north entrance. In 1999, shoaling to bare was reported just NNW of Daybeacon 2 in the N entrance to Parrot Creek.

(45) **Lucy Point Creek**, about 2 miles westward of Parrot Creek, also connects Coosaw and Morgan Rivers. In 1994-1999, the reported controlling depth in the creek was 8 feet, for about 0.3 mile. Currents in the creek are reported to be very changeable and unpredictable. A highway bridge crossing the creek 0.3 mile from the entrance has a fixed span with a clearance of 14 feet. The adjacent power and telephone cables have a clearance of 28 feet. There is a surfaced launching ramp close N of the fixed bridge. A daybeacon marks the entrance.

## Charts 11516, 11517, 11519, 11513, 11518

(46) **Morgan River** flows into St. Helena Sound from westward. The river is about 8 miles long and at its head connects with Chowan Creek, a tributary of Beaufort River. At the divide, this passage is nearly dry at low water where U.S. Route 21 highway bridge has a 28-foot fixed span with a clearance of 4 feet. The mean range of tide near the head of Morgan River is about 7 feet. **Coffin Creek**, on the south side of Morgan River near the mouth, has a shrimp-packing plant 1.7 miles above the creek mouth. In 1985, the reported controlling depth was 2 feet across the bar at the mouth, thence 8 feet in midchannel to the plant. On **Village Creek**, about 0.8 mile above Coffin Creek, there are two shrimp-packing plants where diesel fuel and supplies may be obtained, in an emergency only. In 1985, using local knowledge, a reported depth of 5 feet was available from the entrance to the shrimp-packing plants 1.5 miles upstream. **Edding Creek**, is about 1.5 miles west of Village Creek. In 1983, the reported controlling depth in the creek was 5 feet for a distance of 2.5 miles.

(47) On **Jenkins Creek**, about 2.1 miles westward of Edding Creek, are two shrimp-packing plants on the east side of the creek about 1.5 to 2 miles above the mouth. In 1994-1999, the reported controlling depth was 11 feet to these plants where diesel fuel, water and ice can be obtained in an emergency.

(48) On the south shore of the Morgan River, west of Jenkins Creek, a marina has berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out station, launching ramp and wet and dry storage. Hull, engine and electronic repairs can be made; a 50-ton lift is available.

## Chart 11517

(49) **Johnson Creek**, at the northern end of Hunting Island, was reported closed at low water in 1973. Extensive shoals, bare at low water, are eastward and northeastward of the mouth of the creek. The area should be used only at high water by shallow-draft vessels with local knowledge.

(50) **Fripp Inlet**, reported to be marked by private buoys, is south of St. Helena Sound between Hunting Island and **Fripp Island**. Two spherical water tanks on cylindrical supports, on Fripp Island southwestward of the inlet, are prominent. The entrance is well defined by breakers, and flats which show at low water. The entrance is subject to continual change; entrance should not be attempted without local knowledge. A highway bridge across the inlet has a fixed span with a clearance of 15 feet. On **Old House Creek**, about 0.3 mile westward of the bridge and on the south side of the inlet, is a marina where gasoline, diesel fuel, water, ice, a launching ramp, some marine supplies, and a 2-ton mobile hoist are available. In 1983, the reported controlling depth was 6 feet from the entrance to the marina 1.6 miles above the mouth and 12 feet alongside the float. Just southeastward of the marina is the Fripp Island Sea Rescue Heliport. In cases of emergency, the heliport can be contacted through the marina or Fripp Island security on VHF-FM channel 16; telephone 843-838-2832, 843-838-2334. **Harbor River**, at the head of the inlet, connects with St. Helena Sound to the eastward, and **Story River** connects the inlet with Trenchards Inlet and Station Creek to the westward. In 1983, the reported controlling depth was 5 feet in Harbor River and 5 feet in Story River. U.S. Route 21 highway bridge over Harbor River, 0.5 mile above the mouth, has a swing span with a clearance of 15 feet. An overhead power cable crossing along the southwest side of the bridge has a clearance of 110-feet. **Wards Creek**, on the north side of Harbor River 0.25 mile above the highway bridge, has a shrimp-packing plant about 1.2 miles above the mouth where emergency supplies may be obtained. In 1983, the reported controlling depth was 4 feet.

(51) **Skull Inlet**, 3 miles southwest of Fripp Inlet, is a narrow passage with little water over the bar.

## Chart 11516

(52) **Pritchards Inlet** (32°17.0' N., 80°33.0' W.), 5 miles northeast of Port Royal Sound, is a narrow passage from the ocean to **Moon Creek** which connects with the upper part of Trenchards Inlet; there is very little water over the bar.

(53) **Trenchards Inlet**, just northeast of Port Royal Sound, has a bar which extends about 2 miles from shore; the narrow unmarked channel over the bar had a reported controlling depth of 3 feet in 1983. Local knowledge is advised. This inlet is connected at its head by Station Creek, which joins Port Royal Sound to the westward.

(54) **Port Royal Sound**, one of the largest deepwater harbors on the Atlantic Coast between Cape Henry and

Key West, has an entrance about 2 miles wide between **Bay Point** on the northeast and **Hilton Head** on the southwest. It is about 50 miles southwest of Charleston and is the ocean entrance to Port Royal and Beaufort.

### COLREGS Demarcation Lines

(55) The lines established for Port Royal Sound are described in **80.712**, chapter 2.

### Prominent feature

(56) Three water tanks on Hilton Head Island are the most prominent objects at the entrance to Port Royal Sound. The entrance is between shoals that extend up to 10 miles offshore. The land on both sides of the entrance is low and marshy, and fringed by sand beaches and timbered land. The breaking shoals are prominent. Port Royal Sound Lighted Whistle Buoy P (32°05'08"N., 80°35'02"W.), marks the entrance.

### Channels

(57) A Federal project provides for a dredged channel 27 feet deep across the bar and through the sound to Bay Point, thence 24 feet in Beaufort River to a 27-foot turning basin in Battery Creek at Port Royal. (See Notice to Mariners and latest editions of the charts for controlling depths.) Several unmarked channels, all requiring local knowledge, lead through the breakers. **South Channel** to the westward of the dredged channel and **Southeast Channel**, between Martins Industry and St. Michaels Breaker just north of it, are the more important. The dredged channel is well marked by lights, lighted ranges, and buoys. The channel in Beaufort River, from the dredged channel northward to Beaufort, is part of the Intracoastal Waterway and had a reported controlling depth of 12 feet in 1983. (See chart 11518.)

### Anchorages

(58) Port Royal Sound has natural depths of from 26 to 50 feet and is sometimes used as a harbor of refuge in winter. The best anchorage is off the mouth of Beaufort River westward of Bay Point northwest of Lighted Buoy 25. The holding ground on the rocky bottom south of Bay Point is poor. There is also good anchorage in 22 to 26 feet to the eastward of the dredged channel off the mouth of Chowan Creek.

### Dangers

(59) The breaking shoals extending almost 10 miles off Bay Point, eastward of the entrance channel, and for about 8 miles off Hilton Head Island, are the principal dangers. In thick weather, vessels should not approach the entrance too closely before picking up the pilot, especially on the flood, when the current sets directly onto the shoals: **Martins Industry**, the outermost shoal, **St. Michaels Breakers**, just north of it, and the **Great North Breakers**, between it and Bay Point. **Gaskin Banks**, **Fishing Bank**, and **Joiner Bank** are to the westward of the entrance channel. In 1995, a submerged wreck was about 1.5 miles southwest of Port Royal Sound Lighted Whistle Buoy P, in about 32°04'05"N., 80°36'14"W.; and submerged obstructions were about 0.35 mile southward and 1 mile south-southwestward of Lighted Whistle Buoy P., in about 32°04'51"N., 80°34'57"W., and 32°04'18"N., 80°35'31"W., respectively.

(60) **Danger zones** of rifle and pistol ranges are in Broad River, Archers Creek, and Ribbon Creek. (See **334.480**, chapter 2, for limits and regulations.)

### Currents

(61) The tidal currents on the bar have a velocity of 1.5 knots, off Hilton Head 1.8 knots, and at Beaufort River entrance 1.4 knots. Winds greatly influence the velocity of the tidal current, especially on the runout after prolonged easterlies, which on the ebb often reaches 5 knots. The current generally sets fair with the channel, except at the turn from the entrance channel into Bay Point Reach, where a strong current sets diagonally across the channel. Here, on the ebb, vessels should exercise caution lest they be set onto St. Michaels Breakers, eastward of the bar channel. The tidal currents in the sound have a velocity of 2 knots or more at times. The tide rips on Fishing Rip sometimes have the appearance of breakers. Predictions for a number of places in Port Royal Sound and vicinity are given in the Tidal Current Tables.

### Weather, Beaufort, Port Royal Sound, and vicinity

(62) Beaufort and Port Royal Sound have a pleasant climate where summers are warm and humid while winters are mild. Winds are generally from the northeast in fall and winter and southerly in spring and summer; the average wind speed is around 10 knots.

(63) The average high temperature at Beaufort is 76°F (24.4°C) while the average low is 57°F (13.9°C). July is the warmest month with an average high of 91°F (32.8°C) and an average low of 74°F (23.3°C). January is the coolest month with an average high of 58°F (14.4°C) and an average low of 39°F (3.9°C). Each month, June, July, and August has reported temperatures in excess of 100°F (37.8°C) and the all-time warmest temperature of 106°F (41.1°C) occurred in June 1985 and July 1986. Each month, October through April, has recorded minimums of freezing or lower and the coolest reading on record is 5°F (-15°C), recorded in January 1985 In any given year, 90°F (32.2°C) or warmer temperatures can be expected on 56 days while temperatures below freezing can be expected on 25 days..

(64) Summer is the rainy season (June-August) during which 38 percent of the annual rainfall is accumulated on about 7-9 days per month, mostly in the form of showers and thunderstorms. The annual average precipitation for Beaufort is 50 inches (1,270 mm). August is the wettest month averaging over 7 inches (178 mm) and November is the driest month averaging 2.4 inches (61 mm). Snowfall is rare in Beaufort averaging less

than 1 inch (25 mm) each year. Snow has fallen in each month, December through March and nearly 6.5 inches (165.1 mm) fell in one 24-hour period during February 1973.

(65) Since 1842, 66 tropical storms have come within 50 miles (93 km) of Beaufort, South Carolina, 25 of these storms since 1950. The most noteworthy in recent time was in 1959 when Hurricane Gracie made landfall just east of Beaufort near Edisto Island at noon on September 29. The Marine Corps Air Station at Beaufort reported sustained winds of 84 knots with gusts to 120 knots. Wind damage for the Beaufort area was the worst on record and flooding was extensive.

(66) Fog occurs mostly in the winter and may be experienced from October to April, or after a very warm day when there is a sharp drop in temperature at night. It usually burns off in the forenoon. Easterly winds bring in the fog and westerly winds clear it away. (See Appendix B for the **Beaufort climatological table**.)

### Pilotage, Beaufort/Port Royal

(67) Pilotage is compulsory for all foreign vessels and for U.S. vessels under register in the foreign trade. Pilotage is optional for U.S. vessels which have on board a pilot licensed by the Federal Government. Pilotage is available from the Port Royal Branch Pilots Association, P.O. Box 404, Port Royal, SC 29935; telephone, 843-597-0017. The pilot boards vessels at Port Royal Lighted Whistle Buoy P (32°05'08"N., 80°35'02"W.) from a 40-foot pilot boat equipped with VHF-FM channel 16. Pilotage is available 24 hours a day. Arrangements should be made in advance by telephone or through the ship's agent. A 24 hour notice of arrival time is requested.

### Towage

(68) There are no tugs at Port Royal or Beaufort. If required, they may be obtained from Charleston or Savannah by prior arrangements through ships' agents.

### Quarantine, customs, immigration, and agricultural quarantine

(69) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(70) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

### Harbor regulations

(71) There are no harbor regulations at Port Royal and Beaufort. The State Ports Authority Terminal at Port Royal is under the jurisdiction of the Director of the South Carolina State Ports Authority.

### Wharves

(72) The South Carolina State Ports Authority Terminal (Pier 21), on the northeast side of the turning basin in Battery Creek at Port Royal, is the only deepwater facility in the area. It is owned by the Authority and operated by Port of Port Royal, Inc. The 500-foot marginal wharf at the terminal had reported depths of 27 feet alongside in June 1983. A transit shed and a warehouse with 60,000 square feet and 8,500 square feet of storage area, respectively, are available at the terminal. The terminal has highway and railroad connections. Lumber and agri-chemicals are shipped from the terminal. The other facilities at Port Royal include several small wharves and piers used by fishing vessels. There are only small-craft facilities at Beaufort; these are described later in this chapter.

### Supplies

(73) Some marine supplies and provisions are available through ship chandlers in Savannah. Bunker C fuel oil and diesel oil are brought in by barge or truck from Savannah. Freshwater is piped to the South Carolina State Ports Authority Terminal.

### Repairs

(74) There are no drydocking or major repair facilities for oceangoing vessels at Port Royal and Beaufort; the nearest such facilities are at Charleston and Savannah.

### Communications

(75) Rail freight and bus connections are available. There are good highways to the outer islands and to Savannah, Charleston, and inland places.

(76) **Beaufort River**, which flows into Port Royal Sound from northward just inside Bay Point, is the approach to the U.S. Marine Corps Recruit Training Depot on Parris Island, Port Royal, and Beaufort. The river is a link in the Intracoastal Waterway; above the improved portion depths of 12 feet or more can be taken to the city of Beaufort.

(77) **Station Creek** joins Beaufort River from eastward 1 mile above Bay Point. An inside route used only by local fishermen leads from Port Royal Sound to St. Helena Sound through Station Creek, Story River, and Harbor River. In 1983, the reported controlling depths were 5 feet in Story River and Harbor River and in 1999, the reported controlling depth in Station Creek was 3.5 feet.

(78) **Cowen (Chowan) Creek**, which empties into Beaufort River from northeastward about 5 miles above Bay Point, connects at its head with Morgan River. Passage to Morgan River is restricted about 5 miles above the mouth of Cowen Creek by U.S. Route 21 highway bridge and by the shoals in that vicinity.

(79) **Parris Island**, on the west side of the entrance to Beaufort River, is the site of a U.S. Marine Corps Recruit Training Depot. The dock on Parris Island opposite the mouth of Cowen Creek had a reported least depth of 6 feet alongside in 1983. The remains of an old U.S. Naval graving dock are adjacent to the pier. Several tanks and the many large buildings on the island are prominent.

(80) **Battery Creek** empties into Beaufort River from northwestward 7 miles above Bay Point. Above the

turning basin at Port Royal, the creek, in 1999, had a reported controlling depth of 12 feet to State Route 802 highway bridge, and thence in 1983, 7 feet in a narrow winding channel to about a half mile below the railroad bridge. At this point, 4.4 miles above the mouth, overhead power cables crossing the creek have a clearance of 12 feet. The highway bridge has a fixed span with a clearance of 45 feet.

(81) **Archers Creek**, a narrow passage leading westward from the mouth of Battery Creek to Broad River, is shoal at its eastern end. There is exposed piling at its western end. About midway of its length, a highway bridge has a 34-foot fixed span with a clearance of 16 feet. An overhead power cable is close eastward of the bridge; clearance is not known. The creek, along with **Ribbon Creek**, is included in the danger zone of a rifle range. (See **334.480**, chapter 2, for limits and regulations.)

(82) **Port Royal**, a town on the north bank of the entrance to Battery Creek, is one of the oldest settlements on the Atlantic and of marked historical interest. The large modern State Ports Authority Terminal, described earlier, is here. Several plants above and below the terminal process shrimp, crab, oysters, and fish for shipment inland. Port Royal is the terminus of a branch of the Seaboard System Railroad.

(83) **Beaufort** (pronounced Bew-fert), on the point of land jutting eastward into Beaufort River 11 miles above Bay Point, is a city of great historical interest. The city can also be reached from the northward via the Intracoastal Waterway. There are motels, banks, a hospital, and numerous small businesses. A good portion of the commercial life of the city is dependent on the proximity of a U.S. Naval hospital, the Marine Corps Recruit Training Depot, and the Marine Corps Air Station. It has good highway connections with the mainland and the other islands and beaches. It is served by a branch of the Class II railroad. Principal commodities handled are fish, crabs, and oysters, which are trucked inland after processing, and truck farming. There is fair anchorage in the stream off the wharf westward of U.S. Route 21 highway bridge.

(84) The hospital at Beaufort maintains a pier with a floating landing stage on the south side of Beaufort, westward approximately 1.5 miles from U.S. Route 21 highway bridge. In 1989, the alongside depth was reported as 12 feet. A phone on the pier connects directly to the emergency room.

### Small-craft facilities

(85) A municipal marina and a marina just to westward are on the south side of Beaufort westward of U.S. Route 21 highway bridge. Other marinas are eastward of the bridge just inside the entrances to nearby **Factory Creek** and **Broomfield Creek**. Berths, electricity, gasoline, diesel fuel, water, ice, launching ramps, pump-out station, marine supplies and wet and dry storage are available at the marinas. The marina on Broomfield Creek has a 50-ton lift that can handle craft for complete hull and engine or do-it-yourself repairs.

## Charts 11516, 11519, 11513

(86) **Broad River**, which enters Port Royal Sound on the west side of Parris Island, extends northwestward about 16 miles. The river is not difficult to navigate as far as Whale Branch, about 13 miles above the entrance. A **danger zone** of a pistol range is on the west side of Parris Island. (See **334.480**, chapter 2, for limits and regulations.) State Route 170 highway swing bridge with a clearance of 12 feet crosses Broad River about 7 miles above the entrance. (See **117.1 through 117.59 and 117.921**, chapter 2, for drawbridge regulations.) In 2004, a replacement fixed bridge was under construction with a design clearance of 45 feet. Archers Creek, about 4 miles above the entrance of Broad River, connects Broad River with Beaufort River to the eastward; the creek was described earlier in this chapter.

## Charts 11519, 11513

(87) The railroad bridge, which crosses Broad River about 15 miles above the entrance and 2 miles above the junction with Whale Branch, has a swing span with a clearance of 7 feet. (See **117.1 through 117.59 and 117.921**, chapter 2, for drawbridge regulations.) **Pocotaligo River**, **Tulifiny River**, and **Coosawhatchie River** are shallow streams which empty into the head of Broad River.

(88) **Whale Branch**, which connects Broad River with Coosaw River to the eastward, had a reported midchannel controlling depth of 4.1 feet to U.S. Route 21 highway bridge in 2001; thence in 2003, 5.4 feet was reported to Coosaw River. Overhead power cables crossing the branch have a minimum clearance of 40 feet; the cable with this least clearance crosses the branch immediately eastward of U.S. Route 21 highway bridge about 5.5 miles above the mouth. The railroad bridge over the branch, 4 miles from Broad River, has a swing span with a clearance of 5 feet. The U.S. Route 21 highway bridge, 1.5 miles above the railroad bridge, has a fixed span with a clearance of 20 feet.

(89) **Brickyard Creek**, 5 miles eastward of the highway bridges over Whale Branch, connects Coosaw River with Beaufort River to the southward and is a link in the Intracoastal Waterway.

## Chart 11516

(90) **Chechessee River** empties into Port Royal Sound from westward. The State Route 170 highway bridge crossing the river 10 miles above the mouth has a fixed span with a clearance of 20 feet. In 1983, the reported controlling depth was 20 feet from the mouth of the Chechessee River to just above **Copps Landing** on the

**Colleton River**, 5 miles above the mouth. These rivers are of no commercial importance.

(91) **Mackay Creek** joins Chechessee River from westward about 1 mile above its mouth. The creek, partially marked by a private light and daybeacons, connects Port Royal Sound with Calibogue Sound. This passage is more difficult, narrow, and erratic than the route through Skull Creek. Local knowledge is advised. In 2004, the reported controlling depth in Mackay Creek was 8.3 feet. U.S. Route 278 highway bridge over Mackay Creek from **Buckingham Landing** to **Last End Point** has twin fixed spans with clearances of 25 feet. An overhead power cable crossing the river just north of the bridge has a clearance of 43 feet.

(92) **Skull Creek**, a link in the Intracoastal Waterway, enters Port Royal Sound from southwestward about 4 miles above Hilton Head and is described in chapter 12.

## Chart 11512

(93) **Calibogue Sound** is entered between Hilton Head Island and **Daufuskie Island,** about 5 miles northward of Tybee Light (32°01'20"N., 80°50'44"W.). The entrance is obstructed by shifting shoals through which are several crooked channels. The best channel extends from Tybee Roads northward between Bloody Point Range Front Light and the northwest end of the submerged breakwater 1.9 miles northeast of Tybee Light. The channel into the sound is marked by lights, a buoy, and daybeacons. In 2001, the reported controlling depth was 10 feet over the bar. Inside the bar, depths are ample.

### COLREGS Demarcation Lines

(94) The lines established for Calibogue Sound are described in **80.715**, chapter 2.

(95) **Cooper River**, of importance only as a section of the Intracoastal Waterway, empties into Calibogue Sound from westward about 3 miles above the entrance to the sound.

## Chart 11516

(96) **May River**, which empties into Calibogue Sound from westward about 6 miles above the entrance, is the approach to the town of **Bluffton**, 7 miles above the mouth. The reported controlling depth in the river to Bluffton was 6.0 feet in 2004. The river is marked by daybeacons as far as Bluffton. **Brighton Beach**, a small town about 3 miles downriver from Bluffton, has two small-boat launching ramps. The overhead power cable near **Buck Point** has a clearance of 35 feet over the narrow northern channel and 68 feet over the southern channel. The clearances for the power cable west of Bluffton (chart 11513) are 53 feet over the northern channel and 48 feet over the southern. Passage is sometimes made from May River to Cooper River by way of unmarked **Bull Creek**. The tides meet in BullCreek, forming flats. In 1999-2004, the creek had a reported controlling depth of about 6 feet to the junction of **Savage Creek**, thence the reported depth was 1 foot to a junction with May River.

(97) **Broad Creek** flows into Calibogue Sound from eastward, about 1.2 miles above the entrance to the sound, and extends 6 miles into Hilton Head Island. In 2004-2005, the reported controlling depth was 8.1 feet for a distance of 5 miles. The creek is marked by private lights and daybeacons for about 5.3 miles above the mouth.

(98) The fixed highway bridge, 3.3 miles above the mouth to Broad Creek has a clearance of 65 feet.

(99) The yacht basin at **Harbour Town**, just southward of the entrance to Broad Creek, has a marina at which berths, electricity, gasoline, diesel fuel, pumpout, water, ice and wet storage are available. Electronic repairs can be made. In 2011, the reported approach and alongside depth was 5 feet.

(100) A marina, on the south side of Broad Creek about 3.5 miles above the entrance, has berthage with electricity, gasoline, diesel fuel, water, ice, marine supplies, a pump-out station, wet storage and lift to 77 tons are available. Engine, hull, and electronics repairs can be made.

## Chart 11505, 11512

(101) **Savannah River**, the boundary between the States of South Carolina and Georgia, is 65 miles southwestward of Charleston Harbor and 105 miles northward of the entrance to St. Johns River. It is navigable for deep-draft vessels to the upper end of Savannah Harbor, 19 miles above the outer ends of the entrance jetties, and for barges to the city of Augusta, 172 miles above the entrance.

(102) **Savannah**, on the south bank of Savannah River about 15 miles above the outer end of the jetties, is the second largest city and chief port of the State of Georgia. It is a leading southern port and is the main distributing point for the surrounding country. The city has considerable coastwise and foreign trade, and is connected with coastal cities to the north and south by the Intracoastal Waterway which crosses Savannah River several miles below the waterfront terminals. The climate is equable, and high-velocity winds are infrequent. The water-borne commerce is of a widely varied nature. Imports include petroleum products, sugar, lumber, cement, gypsum, fertilizer materials, nonferrous ores, textiles, plywood, molten sulfur, chemicals, agricultural machinery, and iron and steel products; exports include petroleum products, kaolin clay, woodpulp, vegetable oil, peanuts, grain, naval stores, paper products, tall oil, oil seeds, scrap iron, and agricultural machinery.

### Prominent features

(103) **Tybee Light** (32°01'20"N., 80°50'44"W.), 144 feet above water, is shown from an octagonal brick tower,

upper and lower thirds black, with a white center, on the northeast end of Tybee Island.

(104) The three water tanks on **Hilton Head Island** are prominent in the approach from northward. Also prominent from seaward, are the water tank at Tybee Island, the flashing red lights atop the three WBMQ radio towers on **Oatland Island**, the large chemical plant southwestward of **Mackey Point**, and the five 200-foot-high tanks on **Elba Island**, about 9 miles above the entrance. **Pinckney Island National Wildlife Refuge,** a Marine Protected Area (MPA), is about 0.5 mile W of Hilton Head Island.

### COLREGS Demarcation Lines

(105) The lines established for Savannah River are described in **80.715**, chapter 2.

### Channels

(106) A Federal project provides for a 44-foot channel across the bar through Tybee Roads to the jetties, thence 42 feet for about 16 miles in the main channel to the turning basin at Kings Island, thence 36 to 42 feet for about 1 mile, thence 30 feet for another 1.4 miles to the head of the project about 500 yards below U.S. Route 17 highway bridge. (See Notice to Mariners and latest editions of the charts for controlling depths.) The channels are well marked by lighted ranges, lights, and lighted and unlighted buoys.

(107) A 2.1-mile-long sediment trap is in Back River on the north side of Hutchinson Island. A tide gate is at the head of the sediment trap.

### Anchorages

(108) Most vessels anchor northward or northwestward of the sea buoy, Tybee Lighted Buoy T (31°57'52"N., 80°43'10"W.), where depths range from 19 to 45 feet with good holding ground. There is no anchorage in Savannah River except in an emergency. It is recommended that no vessel, regardless of size, anchor within a two-mile radius of Tybee Lighted Buoy T.

### Dangers

(109) The set of the tidal current in and out of the various sounds and inlets should be carefully considered by vessels approaching Savannah by the inshore route. There are several unmarked obstructions in the approaches. The **danger area** of an Air Force air-to-air and air-to-water gunnery and bombing range is about 15 miles seaward of the light. (See **334.490**, chapter 2, for limits and regulations.)

(110) The entrance to the Savannah River is protected by jetties. The north jetty is unmarked and awash at mean high water and marked about 0.2 mile seaward of its east end by a light. The south jetty is submerged at mean high water and marked at the east end by a light.

### Bridges

(111) An overhead power cable with a clearance of 221 feet crosses the main channel of the Savannah River at Fig Island about 10.3 miles above the mouth. The Eugene Talmadge Memorial Highway bridge near the western edge of the city waterfront, 13 miles above the mouth, has a fixed span with a clearance of 185 feet over the center span width of 500 feet. U.S. Route 17A highway served by this bridge also crosses Back River to the northeastward over a trestle with a 34-foot fixed span which has a clearance of 10 feet. The railroad bridge crosses Back River about 1.2 miles above the Eugene Talmadge Memorial Highway bridge on a trestle with a 30-foot fixed span which has a clearance of 11 feet; an overhead power cable on the south side of this bridge has a clearance of 15 feet. An overhead power cable with a clearance of 208 feet crosses the main channel of the Savannah River at Port Wentworth about 4.3 miles above the Eugene Talmadge Memorial Highway bridge, and another cable with a clearance of 55 feet crosses the mouth of Middle River just to the east of the main channel. The U.S. Route 17 (Houlihan) highway bridge about a mile above Port Wentworth at the head of the Federal project, has a swing span with a clearance of 8 feet. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, WHV-879. (See **117.1 through 117.59 and 117.371**, chapter 2, for drawbridge regulations.) The highway continues on across Middle River and Little Back River. A bridge across Middle River has a 17-foot fixed span with a clearance of 5 feet, and a bridge across Little Back River has a 40-foot fixed span with a clearance of 8 feet.

### Currents

(112) The velocity of the ebb current from the entrance jetties to Savannah is from 2.2 to 3.1 knots. The flood current has a velocity of from 1.6 to 2.4 knots. The current is considerably influenced by winds and freshets. The predicted times of slack water and the times and velocities of strength of flood and ebb at the entrance to Savannah River are given in the Tidal Current Tables. Predictions for a number of other places in Savannah River may be obtained from data in the tables.

(113) Currents set in the direction of the channel except at the entrance near Tybee Light, where the flood sets northwestward across the channel. Between the jetties the flood sets 260°. Freshets occasionally occur in the spring, but do not endanger shipping at the wharves.

(114) It is reported that currents in the river can reach 7 to 8 knots in the vicinity of Garden City Terminal Berths 1-2 (southwest side of the river just below the U.S. Route 17A bridge) and Colonial Oil Berths 50-51 (southwest side of river about 2.5 miles above the 17A bridge).

(115) A tide gate structure crosses Back River about 2.3 miles above its junction with Savannah River. The tide gate allows water to enter Back River above the structure on the tidal flood, and at high water slack the gate is closed and the accumulated water is allowed to flow back

into the Savannah River northwestward of Hutchinson Island. The tide gate operates automatically, and the area immediately upstream and downstream has been designated a restricted area and is marked by buoys and signs.

**Weather, Savannah and vicinity**

(116) This area features a temperate climate with mild winters and warm, humid summers. The average high temperature at Savannah is 77°F (25°C) and the average low is 56°F (13.3°C). July is the warmest month with an average high of 92°F (33.3°C) and an average low of 72°F (22.2°C). January is the coolest month with an average high of 60°F (15.6°C) and an average low of 38°F (3.3°C) . Each month, May through August has recorded temperatures in excess of 100°F (37.8°C) while each month, October through April has recorded temperatures of freezing or lower. The record high temperature at Savannah is 105°F (40.6°C) recorded in July 1986 and the all-time minimum is 3°F (-16.1°C) recorded in January 1985. The average number of occurrences of maximum temperatures of 90°F (32.2°C) or warmer is 70 days for any one year and the average number days of occurrences of 32°F (0°C) or colder minimum temperature is 29 days.

(117) Hurricanes and tropical storms are most likely from June through October. While September and October are the peak months for all tropical cyclones, those of hurricane intensity have shown a preference for August. Since 1842, 68 tropical storms have come within 50 miles (93 km) of Savannah, Georgia, 25 of these storms since 1950. Due to the geographical location and the indention of the Georgia coastline, a direct hit is rare and the distribution is fairly equal for storms approaching from the south and are weakened by the Florida coastline, and those approaching from the southwest and are weakened from having made landfall along the northeastern Gulf Coast. One of Savannah's worst storms occurred in August 1911 when sustained winds reached 83 knots and for 3 hours remained between 70 and 80 knots. Winds on the coast can be expected to be about 20 knots higher in hurricane conditions. Of the seven major hurricanes to directly affect Savannah, five occurred in August while one each struck in September and October. Rainfall from tropical cyclones has exceeded 20 inches (508 mm). Storm tides reached 12 feet (3.65 m) above mean low water at Savannah Beach during the October 1947 hurricane.

(118) Gale force winds occur in thunderstorms, which sometimes organize into squall lines either ahead of, or along a cold front. These can be particularly violent in spring when cold and warm air masses collide.

(119) The local climate varies significantly between the coast and the city region. The lessening Atlantic influence upriver result in about twice as many 90°F (32.2°C) days in summer and twice as many freezing nights in winter, as compared to the coast. In general, the city receives about 5 to 6 more inches (127 to 152 mm) of precipitation on 5 to 10 more days , annually, than the coast. Heavy fog at the airport occurs on an average of 4 to 5 days per month from September through January. This is usually a radiation fog so that visibilities are poorest in the early morning hours but improve during the day. This clearing is retarded by industrial pollutants. Along the coast this type of fog is less frequent, but a more persistent sea fog may hamper visibility in winter and spring.

(120) (See Appendix B for **Savannah climatological table.)**

(121) The National Weather Service Office is at the Municipal Airport, 9 miles outside the city, where **barometers** are compared.

**Pilotage, Savannah**

(122) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in the foreign trade. Pilotage is optional for U.S. vessels in the domestic trade which have on board a pilot licensed by the Federal Government. Pilotage is available from the Savannah Bar Pilots Association, Inc., 550 East York Street, Savannah, GA 31412, telephone 912-236-0226, FAX 912-236-6571. The pilots maintain two pilot boats; the 77-foot GEORGIA and the 65-foot SAVANNAH PILOT. Both have blue hulls and white superstructures, fly the code flag **H**, and are equipped with VHF-FM channels 18A, 16, 14, 13, and 11. The boats are in direct communication with the pilot office in Savannah. Communications on channels 18A, 16, and 14 are monitored by the pilot's office on a 24-hour basis, and by the pilot boats at all hours when working ships. Pilots board from the pilot boat in the vicinity of the sea buoy (Tybee Lighted Buoy T, 31°57'52"N., 80°43'09"W. It is recommended that all deep draft vessels make preparations to be boarded by the Savannah Pilots in a rectangular area enclosed by the following points:

(123) 31°57'49"N., 80°40'30"W.;

(124) 31°56'54"N., 80°38'24"W.;

(125) 31°55'08"N., 80°39'32"W.;

(126) 31°56'05"N., 80°41'36"W. Ships are taken in day or night; deeper draft vessels are taken in on a rising tide. Pilots are arranged for in advance by telephone or FAX (above), through the Savannah Marine Operator, through radio, or through ships' agents.

(127) The Savannah River Pilots Association participates in the North Atlantic right whale Early Warning System (see North Atlantic right whales, indexed as such, chapter 3.)

(128) Pilotage for enrolled and public vessels is available from Coastal Line Handling and Piloting, P.O. Box 15095, Savannah, GA 31416, telephone 912-344-4996, or 24 hours at 912-657-5772. This association will shift any flag vessel in port that does not require tug assistance. A six hour advance notice is requested. The Coastal Pilots monitor VHF-FM channels 16 and 18A.

### Towage

(129) Tugs up to 3,900 hp are available at Savannah on a 24-hour basis; services must be arranged for in advance. Vessels usually proceed from the bar to Savannah without assistance. Tugs are available for docking, undocking, and when shifting berths. Vessels are met by tugs just below their assigned berths, or elsewhere in the harbor as required.

### Quarantine, customs, immigration, and agricultural quarantine

(130) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(131) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) There are public and private hospitals in the city.

### Coast Guard

(132) A **Marine Safety Unit** is in Savannah. (See Appendix A for address.) **Tybee Coast Guard Station** is on the north side of Cockspur Island at the mouth of the river and **Savannah Coast Guard Air Station** is at Hunter Army Airfield, south of the city.

(133) Savannah is a **customs port of entry.**

### Harbor regulations

(134) The Savannah Port Authority has jurisdiction over Savannah Harbor and the port district. Port and harbor regulations are enforced within the port and port district by the **harbormaster** who can be reached at City Hall or through the Savannah Port Authority, and by the county and municipal police forces. Copies of the port and harbor regulations are available from the Savannah Port Authority, 42 E. Bay Street. A **speed limit** of 4 m.p.h., against the current, and 6 m.p.h., with the current, is in force within the harbor limits. The Georgia Ports Authority owns and operates the State docks and warehouses.

### Wharves

(135) There are numerous wharves of all types at Savannah; only the major ones are described. For a complete description of the port facilities, refer to Port Series No. 14, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.) Most of the facilities have highway and railroad connections as well as water and electrical shore power. The smaller facilities at Savannah are used by barges and small vessels, and as vessel repair berths; these are not described. Cargo is generally handled by ship's tackle; special cargo handling equipment, if available, is mentioned in the description of the particular facility. The alongside depths given for each facility described are reported depths. (For information on the latest depths, contact the operator.)

(136) **Facilities on the south side of Savannah River below the Eugene Talmadge Memorial Bridge:**

(137) **Southern LNG, Savannah Wharf** (32°05'15"N., 80°59'30"W.): service platform 66 by 70 feet, unloading platform 96 by 20 feet; 39 feet alongside; 1,255 feet of berthing space with dolphins; deck height, 21 feet; 1,255 feet of berthing space with dolphins; deck height, 21 feet; cranes to 12 tons with 80-foot boom; pipelines extend to storage tanks with 1.2-million barrel capacity; receipt of liquefied natural gas; owned and operated by Southern LNG, Inc.

(138) **ST Services, Savannah Terminal, East Tank Farm, Dock No. 1** (32°04'48"N., 81°02'32"W.): 54-foot face, 600 feet of berthing space with dolphins; 24 feet alongside; deck height, 17 feet; storage tanks, 543,850-barrel capacity; receipt of petroleum products; owned and operated by ST Services.

(139) **76 Lubricants Co., Savannah Terminal Wharf** (32°04'46"N., 81°02'38"W.): 87-foot face; 605 feet of berthing space with dolphins; 34 feet alongside; deck height, 15 feet; storage tanks with 150,000-barrel capacity; receipt of petroleum products; owned and operated by 76 Lubricants Co., a division of Tosco Corp.

(140) **ST Services, Savannah Terminal, West Tank Farm, Dock No. 2** (32°04'44"N., 81°02'48"W.): 40-foot face; 850 feet of berthing space with dolphins; 34 feet alongside; deck height, 15 feet; storage tanks 318,000-barrel capacity; receipt and shipment of petroleum products; owned and operated by ST Services.

(141) **GP Gypsum Corp., Savannah Wharf** (32°04'45"N., 81°03'08"W.): 514-foot face; 746 feet of berthing space with dolphins; 39 feet alongside; deck height, 13.9 feet; traveling tower with 8½-ton capacity traveling bucket; receiving hopper, 800-tons per hour unloading rate; open storage, 250,000-ton capacity; railway track connection to CSX Transportation, Inc.; receipt of gypsum rock and limestone by self-unloading vessels; owned by Savannah Port Authority and operated by GP Gypsum Corp.

(142) **Savannah River Wharf Co.** (32°04'45"N., 81°03'54"W.): 80-foot face; 1,100 feet of berthing space with dolphins; 36 feet alongside; deck height, 13 feet; open storage area for 250,000 tons; vessel-loading spout, 1,100 tons per hour loading rate; receipt and shipment of dry bulk commodities, including wood chips; receipt of aggregate; owned by Peeples Industries, Inc., and operated by Savannah River Wharf Co.

(143) **East Coast Terminal Co. Wharf, Berths 3-7** (32°04'42"N., 81°04'06"W.): 1,800-foot face; 1,800 feet of berthing space; 34 to 36 feet alongside; deck height, 13 feet; four transit sheds, total 304,900 square feet; 28 acres open storage; pipeline extends from wharf to storage tank in rear, 1 million-gallon capacity; receipt and shipment of conventional and containerized general cargo, steel products, liner board, and wood pulp; receipt of cement clinker, bauxite, gypsum, and liquid sulphur; owned by Peeples Industries, Inc., and operated by East Coast Terminal Co.

(144) **Georgia Ports Authority, Ocean Terminal, Berths 1-2** (32°05'11"N., 81°05'54"W.): 1,178-foot face; 1,250

feet of berthing space with dolphin; 42 feet alongside; deck height, 15 feet; two transit sheds, total 171,950 square feet storage; surfaced open storage at rear; receipt and shipment of conventional and containerized general cargo; owned and operated by Georgia Ports Authority.

(145) **Facilities on the north side of Savannah River at Hutchinson Island below the Eugene Talmadge Memorial Bridge:**

(146) **Crescent Towing, Savannah Wharf** (32°05'03"N., 81°05'22"W.): 375-foot face; 375 feet of berthing space; 15 feet alongside; deck height, 13 feet; mooring company-owned floating equipment; owned by International Paper Realty Corp. of South Carolina, and operated by Crescent Towing.

(147) **Savannah Marine Services Wharf** (32°05'09"N., 81°05'42"W.): 200-foot face; 200 feet of berthing space; 8 to 15 feet alongside; deck height, 13 feet; several diesel crawler cranes up to 65-ton capacity, one 45-ton and one 18-ton mobile cranes; mooring vessels for repair; mooring floating drydock; mooring company-owned floating equipment; owned and operated by Savannah Marine Services, Inc.

(148) **Facilities on the Southwest side of Savannah River above Eugene Talmadge Memorial Bridge;**

(149) **Georgia Ports Authority, Ocean Terminal, Berth 13** (32°05'26"N., 81°06'08"W.): 975-foot face; 975 feet of berthing space; 42 feet alongside; deck height, 15 feet; three transit sheds, total 350,460 square feet storage; about 2 acres surfaced open storage with 83 acres of backup open storage; receipt and shipment of conventional and containerized general cargo.

(150) **Georgia Ports Authority, Ocean Terminal, Berths 14-17** (32°05'25"N., 81°06'18"W.): 1,128-foot face (Berths 14 and 15); 1,041-foot face (Berths 16 and 17); 34 feet alongside; deck height, 15 feet; transit sheds, total 327,700 square feet storage; receipt and shipment of conventional and containerized general cargo; mooring vessels.

(151) **Georgia Ports Authority, Ocean Terminal, Berths 18-20** (32°05'38"N., 81°06'22"W.): 1,666-foot face; 1,666 feet of berthing space; 38 to 42 feet alongside; deck height, 15 feet; transit shed, total 57,000 square feet storage; surfaced open storage area; receipt and shipment of conventional and containerized general cargo; receipt of liquid latex.

(152) **Colonial Terminals, Savannah Plant No. 1, Dock 1** (32°05'47"N., 81°06'32"W.): 60-foot face; 683 feet of berthing space with dolphins; 38 feet alongside; deck height, 12.5 feet; storage tanks to about 1.66-million barrel capacity; receipt and shipment of petroleum products, petrochemicals, and chemicals; loading harbor-bunkering barges with bunker C and marine diesel fuel; owned and operated by Colonial Terminals, Inc.

(153) **Colonial Terminals, Savannah Plant No. 2, Dock 2** (32°06'06"N., 81°06'58"W.): 210-foot face; 750 feet of berthing space with dolphins; 38 feet alongside; deck height, 15 feet; storage tanks to 770,000 barrel capacity; shipment and occasional receipt of dry bulk commodities, including kaolin and fertilizer; shipment of liquid kaolin; owned and operated by Colonial Terminals, Inc.

(154) **Citgo Asphalt Refining Co., Savannah Refinery Wharf** (32°06'36"N., 81°07'26"W.): 240-foot face; 675 feet of berthing space with dolphins; 38 to 40 feet alongside; deck height, 12 feet; pipelines extend from wharf to storage tanks, total capacity 1.1-million barrels; receipt of crude oil; shipment of petroleum products; shipment and occasional receipt of asphalt; owned and operated by Citgo Asphalt Refining Co.

(155) **Southern Bulk Industries, Savannah Wharf** (32°06'46"N., 81°07'48"W.): 350-foot face (Dock B); 750 feet of berthing space with dolphins; 70-foot face (Dock A); 36 feet alongside; deck height, 14 feet; covered storage to 100,000 square feet; 8 acres open storage; receipt and shipment of kaolin and miscellaneous dry bulk commodities; receipt and shipment of break bulk commodities, including logs, steel, and gypsum board; owned by Peeples Industries, Inc., and operated by Southern Bulk Industries.

(156) **Gold Bond Building Products, Savannah Plant Gypsum Wharf** (32°06'56"N., 81°07'48"W.): 400-foot face; 650 feet of berthing space with dolphins; 28 feet alongside; deck height, 12.3 feet; open storage for 100,000 tons; one receiving hopper for self-unloading vessels served by electric-belt conveyor system; receipt of gypsum rock; owned and operated by Gold Bond Building Products, Division of National Gypsum Co.

(157) **Georgia Ports Authority, Garden City Terminal, Berth 50** (32°07'02"N., 81°07'52"W.): 80-foot face; 620 feet of berthing space with dolphins; deck height, 15 feet; pipelines extend from wharves to storage tanks, 2-million barrel capacity; one 2-ton telescopic boom for handling hose; railway connection to CSX Transportation, Inc., and Norfolk Southern Corp.; receipt and shipment of petroleum products, petrochemicals, and chemicals; receipt of vegetable oil, liquid fertilizer, and liquid latex; owned by Georgia Ports Authority; and operated by Paktank Corp., Trans Georgia Terminal, and Guthrie Latex, Inc.

(158) **Georgia Ports Authority, Garden City Terminal, Container Berth 6** (32°07'12"N., 81°08'00"W.): 1,690-foot face; 1,690 feet of berthing space; 42 feet alongside; deck height, 15 feet; 395 acres surfaced open storage area; 49,500 square feet covered storage area; container cranes to 50 long tons; gantry cranes to 40 long tons; toplifts to 43 tons; stackers to 7.5 tons; forklifts to 25 tons; railway connection to CSX Transportation, Inc., and Norfolk Southern Corp.; receipt and shipment of containerized and roll-on/roll-off general cargo; owned and operated by Georgia Ports Authority.

(159) **Georgia Ports Authority, Garden City Terminal, Container Berths 1-5** (32°07'36"N., 81°08'12"W.): 2,369-foot face (Berths 4-5); 2,369 feet of berthing space; 2,478-foot face (Berths 1-3); 2,478 feet of berthing space; 42 feet alongside; deck height, 15 feet; container cranes to 50 long tons; gantry cranes to 40 long

tons; toplifts to 43 tons; stackers to 7.5 tons; forklifts to 25 tons; railway connection to CSX Transportation, Inc., and Norfolk Southern Corp.; receipt and shipment of containerized and roll-on/roll-off general cargo; owned and operated by Georgia Ports Authority.

(160) **Georgia Ports Authority, Garden City Terminal, Container Berth 62** (32°08'11"N., 81°08'36"W.): 135-foot face; 682 feet of berthing space with dolphins; 36 feet alongside; deck height, 15 feet; pipeline extends from wharf to 17-million gallon storage tanks; one swivel-jointed pipeline loading arm; railway connection to CSX Transportation, Inc., and Norfolk Southern Corp.; receipt of anhydrous ammonia; owned by Georgia Ports Authority, and operated by PCS Phosphate.

(161) **Facilities on the west side of Savannah River (Port Wentworth):**

(162) **Koch Materials Co., Savannah Dock** (32°08'23"N., 81°08'38"W.): 30-foot face; 680 feet of berthing space with dolphins; deck height, 12 feet; pipelines extend from wharf to storage tanks, 245,000 barrels capacity; one swivel-jointed pipeline loading arm; receipt of asphalt; owned and operated by Koch Materials Co.

(163) **Savannah Sugar Refinery Wharf** (32°08'48"N., 81°08'33"W.): 288-foot face; 30 feet alongside; 600 feet of berthing space with dolphin; deck height, 18 feet; pipeline extends from wharf to storage tanks, 3.66-million gallons capacity; 150,000-ton covered storage area; crawler cranes to portable 15-ton receiving hoppers serving electric belt conveyors, extending to refinery in rear; receipt of raw sugar, molasses, and fuel oil for plant consumption, owned and operated by Savannah Sugar Refinery, Division of Imperial Sugar.

(164) **Atlantic Wood Industries Wharf** (32°08'51"N., 81°08'35"W.): 217-foot face; 26 feet alongside; 400 feet of berthing space with shore moorings; deck height, 12 feet; 35 acres open storage; forklifts to 10-tons; mobile cranes to 50-tons; shipment of timber and timber products; owned and operated by Atlantic Wood Industries, Inc.

(165) **Georgia Steamship Co., Savannah Wharf** (32°09'09"N., 81°09'06"W.): 200-foot face; 36 feet alongside; 800 feet of berthing space with dolphins; deck height, 16 feet; 48 acres open storage; 230,000 square feet covered storage; forklifts to 9 tons; receipt and shipment of conventional general cargo, paper rolls, lumber, plywood, supplies, and equipment; owned and operated by Georgia Steamship Co., subsidiary of Georgia-Pacific Corp.

### Supplies

(166) All kinds of marine supplies and provisions are available at Savannah. Large vessels are usually bunkered at berth in the harbor from barges. Freshwater is available at most of the berths.

### Repairs

(167) There are two major marine repair facilities at Savannah that can make all types of hull, engine, electrical, and electronic repairs to oceangoing vessels. Both facilities are on the southwest side of the river, about 200 feet and 0.85 mile above the Eugene Talmadge Memorial Bridge, respectively. A graving dock, 540 feet long, 73 feet wide, and 20 feet over the keel blocks at mean low water, is at the more northerly facility; cranes up to 50 tons are available here. The other facility has a 180-foot marine railway; cranes to 60 tons are available here. Machine, electronic, electrical, sheet metal, and welding repair shops are off the waterfront at Savannah. Floating cranes up to 75 tons are available.

### Communications

(168) Savannah has excellent rail, water, highway, and air transportation facilities. Two railroads operate out of the city. There is regular scheduled steamship service to all parts of the world, and considerable shipping coastwise and along the Intracoastal Waterway. Two major airlines, several bus lines, and numerous truck lines serve Savannah. The city has highway connections with Interstate Routes 16 and 95, and with U.S. Routes 17, 17A, and 80.

### Small-craft facilities

(169) Water and electricity are available at the Municipal Dock, the only small-craft facility at Savannah. The dockmaster can be contacted at City Hall. The nearest place where gasoline, diesel fuel, and other services can be obtained is on the Intracoastal Waterway south of Savannah at Thunderbolt, or at Isle of Hope. (See chapter 12 for details.)

## Charts 11514, 11515

(170) The Savannah River above Savannah is navigable to the city of **Augusta**, 172 miles (198 statute miles) above the mouth. A Federal project provides for a 9-foot channel over a width of 90 feet from near U.S. Route 17 highway bridge, 18.8 miles (21.6 statute miles) above the mouth, to Augusta. (See Notice to Mariners and latest editions of the charts for controlling depths.) Daybeacons mark some of the shoal and critical spots in the river, but the best guide for the mariner is the use of the chart to carry the best water. The river is swift and tortuous; daybeacons are sometimes carried away. Numerous foul areas exist near the shore, and floating debris is a constant danger to navigation. Local knowledge is advised.

(171) The freshet variation above the normal pool level of the **New Savannah Bluff Lock and Dam,** 162.7 miles (187.2 statute miles) above the mouth, is about 13 feet ordinarily, with an extreme of 34 feet. The lock is 360 feet long, 56 feet wide, and has a depth over the lower miter sill of 10 feet. The depth over the upper miter sill at normal pool level is 13½ feet; the vertical lift is 15 feet. Anyone desiring lockage must contact the lock operator at least 24 hours in advance at the New Savannah Bluff

Lock and Dam Office, 706-798-4644, or the James B. Messerly Wastewater Treatment Plant, 706-793-1691. Calls to either location should be made between 0800 and 1630, Monday through Friday, except on designated holidays for City of Augusta offices. The lock will be operated seven days a week between the hours of 0800 and sunset on appointment. There is no navigation lock in the dam about 4 miles above Augusta.

**Bridges**

(172) Between U.S. Route 17 highway bridge and the lock and dam, the limiting clearances of the drawbridges are 7 feet, and 27 feet for the fixed bridges. Between the lock and the head of navigation the limiting drawbridge clearances are 12 feet and the fixed bridges 26 feet at normal pool level. The bridgetender of the railroad bridge at Clyo, about 53 miles above the mouth, monitors VHF-FM channel 16 and works on channel 13; call sign, WKB-679. (See **117.1 through 117.59, 117.371, and 117.937**, chapter 2, for drawbridge regulations.) Overhead power cables with clearances of 76 feet and 53 feet cross the river 169.7 miles (195.3 statute miles) and 174.8 miles (201.1 statute miles) above the mouth, respectively.

(173) There are numerous landings between Savannah and Augusta without wharves or rail connections. At New Savannah Bluff Lock, fuel, supplies, and services can be arranged for by telephone. Fuel, supplies, and services are available at Augusta.

(174) A city wharf, a Georgia State barge terminal, and an oil terminal, are at Augusta.

(175) The barge terminal has a depth of 9 feet alongside and a transit shed with 40,000 square feet of storage space. Modern freight handling equipment up to 10-ton lifting capacity is available, and the terminal is served by rail and truck connections.

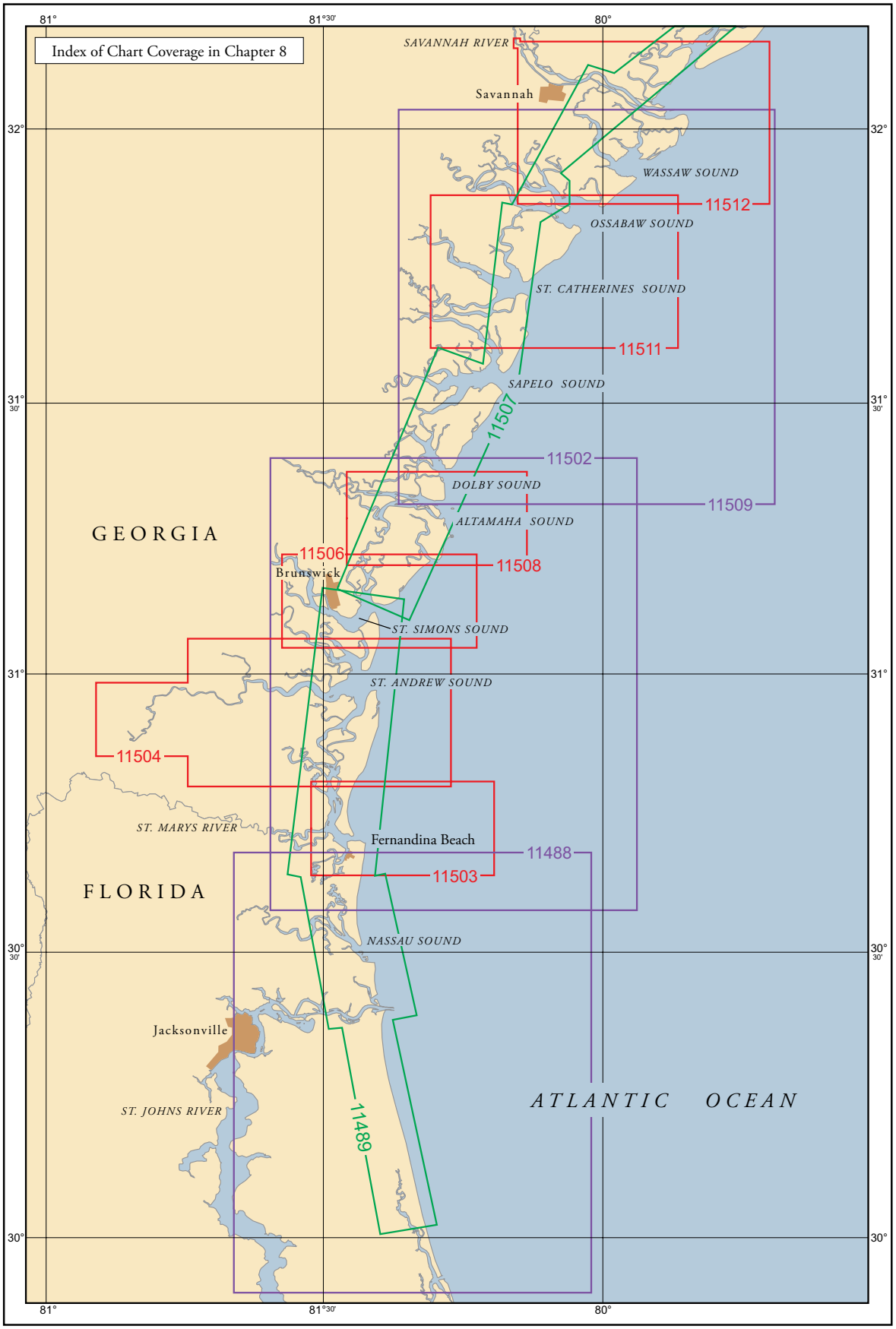
(176) The traffic on the river above Savannah is mainly barges carrying petroleum products.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11521 | Goose Creek entrance, Cooper River | 32°55'N/79°57'W | 5.9 | 5.6 | 0.2 |
| 11521 | Charleston, Customhouse Wharf | 32°47'N/79°56'W | 5.8 | 5.4 | 0.2 |
| 11521 | Fort Sumter, Charleston Harbor | 32°45'N/79°53'W | 5.6 | 5.3 | 0.2 |
| 11521 | Rockville, Bohicket Creek, N. Edisto River | 32°36'N/80°12'W | 6.3 | 6.0 | 0.2 |
| 11521 | Seabrook, Ashepoo River, St. Helena Sound | 32°31'N/80°24'W | 6.7 | 6.4 | 0.2 |
| 11517 | Edisto Beach, Edisto Island | 32°30'N/80°18'W | 6.3 | 6.0 | 0.2 |
| 11517 | Otter Island, St. Helena Sound Entrance | 32°29'N/80°25'W | 6.6 | 6.2 | 0.2 |
| 11516 | Beaufort, Beaufort River | 32°26'N/80°41'W | 8.0 | 7.6 | 0.2 |
| 11517 | Harbor River Bridge, St. Helena Sound | 32°24'N/80°27'W | 6.7 | 6.3 | 0.2 |
| 11513 | Baileys Landing, Okatee River, Colleton River | 32°21'N/80°53'W | 8.7 | 8.3 | 0.2 |
| 11517 | Fripp Inlet, Hunting Island bridge | 32°20'N/80°28'W | 6.7 | 6.3 | 0.2 |
| 11513 | Bluffton, May River, Calibogue Sound | 32°14'N/80°52'W | 8.6 | 8.2 | 0.2 |
| 11513 | Port Royal Plantation, Hilton Head I., Port Royal | 32°13'N/80°40'W | 6.8 | 6.3 | 0.2 |
| 11513 | Braddock Point, Hilton Head Island | 32°07'N/80°50'W | 7.3 | 7.0 | 0.2 |
| 11512 | Savannah (Bull Street), Savannah River | 32°05'N/81°06'W | 8.6 | 8.1 | 0.2 |
| 11512 | Savannah River Entrance, Ft. Pulaski | 32°02'N/80°54'W | 7.5 | 7.1 | 0.2 |
| 11522 | Pennys Creek, west entrance, Stono River | 32°46'N/80°04'W | 5.9 | 5.6 | 0.2 |
| 11522 | Elliott Cut entrance, Stono River | 32°46'N/80°00'W | 5.7 | 5.4 | 0.2 |
| 11522 | Church Flats, Stono River | 32°45'N/80°10'W | 6.9 | 6.6 | 0.2 |
| 11522 | Yonges I., Wadmalaw R., N. Edisto River | 32°42'N/80°13'W | 7.1 | 6.7 | 0.2 |
| 11522 | Toogoodoo Creek, 2 mi. above ent, N. Edisto R. | 32°40'N/80°18'W | 7.0 | 6.6 | 0.2 |
| 11522 | Folly River North | 32°40'N/79°55'W | 6.0 | 5.6 | 0.2 |
| 11522 | Bluff Point, Wadmalaw River | 32°39'N/80°15'W | 6.7 | 3.3 | 0.2 |
| 11522 | Snake Island, Stono River | 32°38'N/80°01'W | 5.8 | 5.5 | 0.2 |
| 11522 | Steamboat Ldg, Steamboat Creek, N. Edisto R. | 32°36'N/80°17'W | 6.6 | 6.2 | 0.2 |
| 11522 | Rockville, Bohicket Creek, N. Edisto River | 32°36'N/80°12'W | 6.3 | 6.0 | 0.2 |
| 11522 | Point of Pines, N. Edisto River | 32°35'N/80°14'W | 6.2 | 5.9 | 0.2 |
| 11517 | Pine Landing, S. Edisto River | 32°36'N/80°23'W | 6.8 | 6.5 | 0.2 |
| 11516 | Battery Creek, 4 mi. above ent., Beaufort River | 32°25'N/80°42'W | 8.2 | 7.8 | 0.2 |
| 11516 | Colleton River Entrance, Port Royal Sound | 32°19'N/80°48'W | 7.8 | 7.5 | 0.2 |
| 11516 | Capers Island, Trenchards Inlet | 32°16'N/80°35'W | 7.0 | 6.6 | 0.2 |
| 11516 | Port Royal Plantation, Hilton Head I., Port Royal | 32°13'N/80°40'W | 6.8 | 6.3 | 0.2 |
| 11516 | Broad Creek, Hilton Head Island | 32°11'N/80°45'W | 8.1 | 7.7 | 0.2 |
| 11516 | Haig Pt., Daufuskie I., Cooper River | 32°09'N/80°50'W | 7.6 | 7.3 | 0.2 |
| 11516 | Braddock Point, Hilton Head Island | 32°07'N/80.50'W | 7.3 | 7.0 | 0.2 |
| 11519 | Fields Point, Combahee River | 32°34'N/80°34'W | 6.8 | 6.4 | 0.2 |
| 11519 | Summerhouse Point, Bull River, Coosaw River | 32°32'N/80°34'W | 7.1 | 6.8 | 0.2 |
| 11519 | Brickyard Point, Brickyard Creek, Coosaw River | 32°30'W/80°41'W | 8.0 | 7.7 | 0.2 |
| 11519 | Corning Landing, Whale Branch, Broad River | 32°30'N/80°47'W | 8.6 | 8.2 | 0.2 |
| 11519 | Lucy Point Creek entr., Morgan River | 32°27'N/80°37'W | 6.7 | 6.4 | 0.1 |
| 11518 | Harbor River entrance, Bulls Bay | 33°03'N/79°32'W | 5.4 | 5.1 | 0.2 |
| 11518 | Five Fathom Creek ent., Bull Bay | 33°00'N/79°30'W | 5.4 | 5.1 | 0.2 |
| 11518 | Moores Landing, ICWW, Sewee Bay | 32°56'N/79°39'W | 5.6 | 5.2 | 0.2 |
| 11518 | Wharf Creek, Summerhouse Creek, Bulls Bay | 32°55'N/79°37'W | 5.6 | 5.3 | 0.2 |
| 11518 | Capers Creek, S. Capers Island | 32°51'N/79°42'W | 5.5 | 5.1 | 0.2 |
| 11518 | South Dewees Island, Dewees Inlet | 32°50'N/79°44'W | 5.5 | 5.1 | 0.2 |
| 11518 | Limehouse Bridge, Stono River | 32°47'N/80°06'W | 6.2 | 5.8 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011

| TIDAL INFORMATION (continued) | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11518 | Charleston, Customhouse Wharf | 32°47'N/79°56'W | 5.8 | 5.4 | 0.2 |
| 11518 | Breach Inlet, Isle of Palms | 32°47'N/79°49'W | 5.5 | 5.1 | 0.2 |
| 11518 | Ben Sawyer Bridge, ICWW | 32°46'N/79°51'W | 5.6 | 5.2 | 0.2 |
| 11518 | Pennys Creek, west entrance, Stono River | 32°46'N/80°04'W | 5.9 | 5.6 | 0.2 |
| 11518 | The Cove, Fort Moultrie, Charleston Harbor | 32°46'N/79°51'W | 5.6 | 5.3 | 0.2 |
| 11518 | Elliott Cut entrance, Stono River | 32°46'N/80°00'W | 5.7 | 5.4 | 0.2 |
| 11518 | Fort Johnson, Charleston Harbor | 32°45'N/79°54'W | 5.6 | 5.3 | 0.2 |
| 11518 | Church Flats, Stono River | 32°45'N/80°10'W | 6.9 | 6.6 | 0.2 |
| 11518 | Dawho Bridge, Dawho River, N. Edisto River | 32°38'N/80°21'W | 6.7 | 6.4 | 0.2 |
| 11518 | Edisto Marina, Big Bay Creek entrance | 32°30'N/80°20'W | 6.5 | 6.2 | 0.2 |
| 11518 | Sams Point, Lucy Pt. Creek, Coosaw River | 32°29'N/80°36'W | 7.2 | 6.9 | 0.2 |
| 11518 | Marine Corps AirStation, Brickyard Ck, Beaufort | 32°28'N/80°42'W | 8.2 | 7.8 | 0.2 |
| 11518 | Edding Point, Edding Creek, Morgan River | 32°27'N/80°32'W | 7.0 | 6.6 | 0.2 |
| 11518 | Parris Island, MCRD, Beaufort River | 32°21'N/80°40'W | 7.6 | 7.2 | 0.2 |
| 11512 | Tybee Light | 32°02'N/80°51'W | 7.4 | 7.0 | 0.2 |
| 11512 | Beach Hammock, Wassaw Sound | 31°57'N/80°56'W | 7.5 | 7.1 | 0.2 |
| 11512 | Romerly Marsh Creek, Wassaw Sound | 31°56'N/81°00'W | 7.7 | 7.3 | 0.2 |
| 11512 | Isle of Hope, Skidaway River | 31°59'N/81°03'W | 8.4 | 8.0 | 0.2 |
| 11505 | Tybee Creek entrance | 31°59'N/80°51'W | 7.4 | 7.0 | 0.2 |
| 11505 | Bloody Point, Daufuskie I., New River | 32°05'N/80°53'W | 7.3 | 7.0 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011


Index of Chart Coverage in Chapter 8
81°
81°30'
80°
32°
31° 30'
31°
30° 30'
30°
SAVANNAH RIVER
Savannah
WASSAW SOUND
11512
OSSABAW SOUND
ST. CATHERINES SOUND
11511
SAPELO SOUND
11507
11502
DOLBY SOUND
11509
ALTAMAHA SOUND
GEORGIA
11506
11508
Brunswick
ST. SIMONS SOUND
ST. ANDREW SOUND
11504
ST. MARYS RIVER
Fernandina Beach
11488
11503
FLORIDA
NASSAU SOUND
Jacksonville
ST. JOHNS RIVER
11489
ATLANTIC OCEAN

# Savannah River to St. Johns River

(1) This chapter describes the coasts of South Carolina, Georgia, and Florida from Savannah River to St. Johns River, and includes the deepwater ports of Brunswick, GA, and Fernandina Beach, Fla. Also discussed are Wassaw, Ossabaw, St. Catherines, Sapelo, Doboy, Altamaha, St. Simons, St. Andrew, Jekyll, Cumberland, and Nassau Sounds, and their tributaries, and several of the small towns along these waterways.

(2) The Intracoastal Waterway for this section of the coast is described in chapter 12.

### Weather

(3) The southerly latitude and maritime exposure influence the climate of this coast. Winters are mild and short. Polar air masses are moderated although unusually strong, cold air outbreaks can cause foggy conditions along the coast. Cold spells seldom last more than 2 or 3 days. The occasional winter storm results in strong winds and rough seas from October through April. Waves of 8 feet (2.4 m) or more are reported about 20 to 30 percent of the time in deep water, but gales occur less than 1 percent of the time. However, winds of 40 to 50 knots have been recorded in all of these months.

(4) From May through September peak winds offshore are usually in the 30- to 40-knot range, although they could climb higher in a severe thunderstorm or tropical cyclone. Despite the low latitude, tropical cyclones are infrequent along this coast. They are most likely from June through October and one can be expected to move through some part of Georgia each year, usually from the Gulf of Mexico. This fact holds coastal effects to a minimal. The most dangerous are those from the east through south. Because this portion of the coast lies parallel to the mean track of most recurving storms, the incidence of coastal crossing tropical cyclones is extremely low. In addition to strong winds, high tides and rough seas, these storms can trigger torrential rains, severe thunderstorms and even tornadoes or waterspouts. In general, however, summers are warm but a persistent cooling sea breeze is usually present from afternoon into the early evening. Showers and thunderstorms are common along this coast and can reduce visibilities for brief periods. Obstructions to visibilities are most likely to be caused during winter and early spring by fog. This occurs when warm air moves across the cool coastal waters that lie shoreward of the Gulf Stream. Visibilities of less than 0.5 mile (0.9 km) have been observed about 3 to 5 percent of the time from December through February in these waters.

## Charts 11509, 11502, 11488

(5) The coast from Savannah River to St. Johns River extends in a south-southwesterly direction for about 100 miles. Islands separated by numerous sounds and rivers constitute the entire coast. In general these islands are heavily wooded with marshy areas bordering them on their western sides. The 5-fathom curve extends about 7 miles offshore except in the vicinity of St. Simons Sound where 5 fathoms can be found as much as 12 miles offshore.

(6) Caution must be observed along this section of the coast because of the inshore sets caused by the numerous rivers and sounds.

(7) Private lighted and unlighted buoys mark several fish havens that have been established as much as 27 miles offshore along this section of the coast.

(8) This section of the coast, due to its low relief, presents no good radar targets.

### COLREGS Demarcation Lines

(9) The lines established for this part of the coast are described in **80.717 through 80.723**, chapter 2.

### North Atlantic Right Whales

(10) The northern limit of the right whale critical habitat is just south of Altamaha Sound **31°15'N.** from the coast out 15 nautical miles (see 50 CFR 226.203(c), chapter 2). Right whales have been sighted as far north as Savannah River in the calving season, generally November 15 through April 15. In March and April, right whales accompanied by calves migrate northward from the critical habitat, often within 20 miles of the coast to summer feeding grounds off New England. (See **North Atlantic right whales**, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.) It is illegal to approach closer than 500 yards of any right whale. (See **50 CFR 224.103(c)**, chapter 2, for limits, regulations, and exceptions.)

(11) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in the Southeastern United States Seasonal Management Area between November 15 and April 15. The area is defined as the waters bounded to the north by 31°27'N., to the south by 29°45'N., and to the east by 80°51.6'W. (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.)

### Dangers

(12) **Danger areas** for air-to-air and air-to-water gunnery and bombing ranges are off the Georgia coast; see **334.490**, chapter 2, for limits and regulations. (See chart 11480.)

## Chart 11512

(13) From Savannah River to Wassaw Sound, a distance of about 7 miles, the coast is formed by the shores of **Tybee Island** and **Little Tybee Island** which lie in a southwesterly direction. Dangerous shoals extend from the shores of the islands for a distance of 4.5 miles.

(14) On the north side of Tybee Island, the **South Channel** of the Savannah River extends from the main channel at the east end of **Cockspur Island** to the southwest end of Elba Island where it again joins the main channel. The east entrance is marked by lights. In 1979, the east entrance had a controlling depth of 2 feet, thence in 1975, the reported controlling depth was 5 feet to the junction with the Intracoastal Waterway. In 1983, it was reported that greater depths could be carried through the east entrance with local knowledge. **McQueens Island** is west of Tybee Island along the south side of South Channel. **Fort Pulaski National Monument** includes Cockspur and McQueens Islands. **Fort Pulaski** on Cockspur Island was built during the period 1829-1847. **Tybee Coast Guard Station** is on the north side of Cockspur Island. The Intracoastal Waterway crosses the South Channel through Elba Island Cut. The highway bridge crossing the channel between Cockspur and McQueens Islands has a 36-foot fixed span with a clearance of 10 feet. A fixed highway bridge with a clearance of 35 feet crosses the channel between Elba Island and Savannah, 1.5 miles northwestward of Elba Island Cut. An overhead power cable with a clearance of 60 feet is immediately southeastward of the bridge.

(15) **Tybee Island**, a summer resort at the eastern end of Tybee Island, is conspicuous from seaward. An inside approach to the beach is made from South Channel through **Lazaretto Creek** and **Tybee Creek**, U.S. Route 80 highway fixed bridge crosses Lazaretto Creek just inside its entrance from South Channel; clearance is 35 feet. An overhead power cable with a clearance of 55 feet crosses the creek about 300 yards southward of the bridge. In 1979, the controlling depth in Lazaretto Creek was 6 feet from South Channel to about 0.2 mile south of Route 80 highway bridge; thence in 1983, 3 feet was reported to the junction with Tybee Creek; and thence 10 feet was reported in Tybee Creek to Tybee Island.

(16) Small craft occasionally transit the Tybee Inlet entrance. Due to breakers and dangerous, shifting shoals, caution is advised when transiting the area.

(17) In 1986, a partially submerged wreck was reported about 0.3 mile south of the bridge in about 32°00'40"N., 80°53'00"W.

(18) **Chimney Creek** extends north from Tybee Creek. A fish camp on the creek has berths with electricity, gasoline, water, ice, limited marine supplies, and a 4-ton lift. In 1983, 2 feet was reported available in the creek, but local knowledge is advised.

(19) The remaining portions of Tybee and Little Tybee Islands are generally low and marshy, although they have many wooded hummocks with numerous creeks winding among them. Several creeks flow into the sea, but they are of little importance as their mouths are obstructed by shoals with crooked channels of 2 to 3 feet in depth.

(20) The southwest part of Little Tybee Island, separated from the main body by a stretch of marsh, is **Beach Hammock**. It is distinguishable by a large and heavily wooded hummock which marks the northern point of the entrance to Wassaw Sound.

(21) The entrance to **Wassaw Sound** is about 9.5 miles southward of Tybee Light (32°01'20"N., 80°50'44"W.). Shoals extend offshore a distance of 4 to 4.5 miles from the entrance, forming a shifting bar. In June 1983, the reported controlling depth was 10 feet through the marked bar channel. The entrance, used only by small boats, is marked by a lighted buoy and the bar channel by lighted and unlighted buoys. A private unlighted buoy marks a fish haven about 5 miles eastward of the entrance buoy.

(22) In 1994, a sunken wreck about 1.2 miles southeast of Wassaw Sound Buoy 9 was reported in about 31°53'00.5"N., 80°52'57.4"W. At low water, the pilot house is fully exposed.

### COLREGS Demarcation Lines

(23) The lines established for Wassaw Sound are described in **80.717**, chapter 2.

(24) After crossing the bar at the entrance to Wassaw Sound, a channel with depths of 19 to 38 feet leads through the southern part of the sound and for about 6 miles up Wilmington River to the Intracoastal Waterway. The channel is marked by lights in its southern part.

### Currents

(25) The tidal currents in Wassaw Sound reach velocities up to 2.2 knots. Predictions for a number of places in the sound and vicinity may be obtained from the Tidal Current Tables.

(26) **Bull River** flows into Wassaw Sound from northward. It is connected with the South Channel of the Savannah River 5 miles below the city of Savannah by St. Augustine Creek, the upper part of Wilmington River, and Elba Island Cut. The mouth of the river is obstructed by shoals. In 1983, the reported controlling depth was 10 feet from the mouth through St. Augustine Creek to a junction with the Intracoastal Waterway. The entrance is marked by a daybeacon. U.S. Route 80 highway bridge, 5.7 miles above the mouth, has a fixed span with a clearance of 20 feet. An overhead power

cable with a clearance of 55 feet crosses the river close northwestward of the bridge. A marina on the W side of the river, close S of the bridge has berths, electricity, gasoline and diesel fuel, water, ice, and some boat repairs.

(27) **Wilmington River** flows into Wassaw Sound from northwestward. The upper end of the river from the junction with Skidaway River is part of the Intracoastal Waterway. **Turner Creek**, which connects the Wilmington and Bull Rivers, had a reported controlling depth of 4.9 feet in October 2004, until its junction with **Richardson Creek**. U.S. Route 80 highway bridge over Turner Creek, 1.6 miles above the mouth, has a fixed span with a clearance of 35 feet. An overhead power cable on the northeastern side of the bridge has a clearance of 55 feet. The highway bridge 3 miles above the mouth has a clearance of 34 feet. An overhead power cable on the southwest side of the bridge has a clearance of 55 feet. Boatyards and marinas on Turner Creek can handle craft to 60 feet for hull, engine and electronic repairs. Gasoline, pump-out station, wet and dry storage, water, ice and berths with electricity are available.

(28) From Turner Creek, Richardson Creek winds generally in a westward direction for about 4 miles to Wilmington River. Two highway bridges crossing Richardson Creek about 2.3 miles from its eastern entrance have fixed spans with a minimum width of 13 feet and a minimum clearance of 5 feet. Overhead power cables at the bridges and 0.3 mile westward have reported minimum clearances of 32 feet. The velocity of the tidal current at the entrance to Wilmington River varies from 1 to 2 knots. Predictions may be obtained from the Tidal Current Tables.

(29) The coast between Wassaw and Ossabaw Sounds is formed by **Wassaw Island**, which is triangular in shape and has a length of about 4.5 miles and a width of about 3.5 miles in its widest part. In general, the island is low and marshy; the strip of firm land forming the coastline is only 0.3 to 0.8 mile wide. The firm land is heavily wooded and has a broad sand beach backed by sand dunes. From this shore dangerous shoals extend to a distance of 3 to 4 miles. The marshy portion of the island is cut by numerous creeks winding among the heavily wooded hummocks. **Romerly Marsh Creek**, and **Odingsell River** separate the island from the islands to the westward.

## Chart 11511

(30) **Ossabaw Sound**, entered between the southern end of Wassaw Island on the north and **Bradley Point** (31°49.4'N., 81°02.9'W.) on the south, is a broad opening in the coast about 15 miles southwestward of Tybee Light. Most of the sound is shallow, and shifting shoals extend seaward about 4 miles. The entrance to the sound is marked by a lighted buoy. **North Channel** and **South Channel** lead through the shoals into the sound. North Channel is marked by buoys and daybeacons, and South Channel is marked by a buoy, a daybeacon, and a light. Small local fishing craft are the principal traffic seaward from the sound. Strangers are advised not to enter as breakers sometimes extend clear across the entrance. Vernon River, Ogeechee River, and numerous smaller rivers and creeks enter the sound.

### Fish haven

(31) A fish haven is about 2 miles east-southeastward of Ossabaw Sound Entrance Lighted Buoy OS.

## Chart 11512

(32) **Vernon River** enters Ossabaw Sound from the northwestward. The Intracoastal Waterway traverses a portion of this river. **Burnside River**, **Little Ogeechee River**, and several creeks enter the Vernon River. **Montgomery**, a town on Vernon River 5 miles above the mouth, has highway connections with Savannah.

## Charts 11511, 11509

(33) **Ogeechee River** flows into the western part of Ossabaw Sound. The river drains an extensive area and is subject to flood conditions which continually change the channel. Navigation to the Seaboard System Railroad bridges, about 27 miles above the sound, is possible with local knowledge. In 1985, the reported controlling depth was 6 feet to the first railroad bridge. This bridge has a 40-foot fixed span with a clearance of 14 feet. The second railroad bridge, parallel to and immediately northward of the first, has a lift span with a clearance of 4 feet down and 41 feet up. (See **117.1 through 117.59 and 117.367**, chapter 2, for drawbridge regulations.) The overhead power cable close northward of the more northerly bridge has a clearance of 50 feet. There is a large pulpwood loading dock with 13 feet alongside 5 miles downriver from the railroad bridges.

(34) A marina with a reported depth of 10 feet alongside is at **Fort McAllister**, about 11 miles above the river entrance; gasoline, ice, supplies, transient berths, pump-out, and a 16-ton lift are available.

### Currents

(35) The currents in the Ogeechee River and Ossabaw Sound have considerable velocity, particularly the ebb setting out of the river. Current predictions for several locations in Ossabaw Sound and vicinity can be obtained from the Tidal Current Tables.

## Chart 11511

(36) The coastline between Ossabaw Sound and St. Catherines Sound is formed by the eastern shore of **Ossabaw Island**, which lies in a southwesterly direction and has a length of 8 miles and a width of 6 miles. The

eastern half of the island is heavily wooded. The north end forms the south shore of Ossabaw Sound.

(37) The seaward side of the island appears unbroken by streams, and shows as a white sand beach backed by heavy woods. Dangerous shoals extend offshore nearly 5 miles.

(38) The southwestern point of the island borders on St. Catherines Sound and is thickly wooded. The western half is almost entirely marshy and is cut up by numerous creeks which provide access to the higher ground to the eastward. On the west the island is separated from the marshes of the mainland by Bear River and **Florida Passage**.

(39) **St. Catherines Sound** is about 24 miles southwestward of Tybee Light. The entrance is over a shifting bar which extends 5 miles offshore. The entrance lighted buoy is about 7 miles offshore. In 1983, the reported controlling depth in the marked bar channel was 8 feet. The points on its northern and southern sides are wooded.

### COLREGS Demarcation Lines

(40) The lines established for St. Catherines Sound are described in **80.717**, chapter 2.

(41) There are no towns on the sound, and strangers seldom enter. Except for light-draft fishing craft, little traffic crosses St. Catherines Bar. Channels with depths of 13 to 38 feet lead from inside the bar into the entrances of its tributaries. The main body of the sound is exposed and becomes quite rough in moderately bad weather. Protected anchorage for small vessels is in **Walburg Creek** on the south side of the entrance to the sound.

### Currents

(42) Tidal currents have considerable velocity at the entrance and in the tributary rivers. The Tidal Current Tables should be consulted for current predictions.

(43) The Intracoastal Waterway crosses St. Catherines Sound just inside the entrance, and affords passage northward through Bear River and Florida Passage to Ossabaw Sound, and southward through North Newport River and Johnson Creek to Sapelo Sound.

(44) Three main rivers enter the sound. **Bear River** and **North Newport River**, which form a portion of the Intracoastal Waterway, flow into the sound from the northwestward and southwestward, respectively. **Medway River** enters the sound from the westward. In 1983, there was a reported controlling depth of 10 feet to **Sunbury**, a small settlement on the western shore 7 miles above the mouth of Medway River. Water can be obtained at the wharf which serves an oyster plant and has a depth of 6½ feet alongside.

(45) **Ashley Creek** makes into the south side of Medway River about 3 miles above the mouth. A fish camp, about 2.7 miles above the mouth of the creek at **Yellow Bluff**, has berths with electricity, gasoline, water, a 2-ton mobile lift, and limited marine supplies. In 1983, a reported depth of about 3 feet could be carried to the fish camp dock.

(46) **Kilkenny Creek** empties into the west side of Bear River about 3.3 miles above the mouth. A fish camp, about 1.8 miles above the mouth of the creek, has berths, gasoline, diesel fuel, electricity, water, ice, pump-out station and wet and dry storage. In 2002, a reported depth of 10 feet could be carried to the fish camp.

(47) **Belfast**, a town on **Belfast River**, is reached by way of the Medway River and Belfast River. In 1983, the reported controlling depth in Belfast River was 4 feet to Belfast. A pile of rocks, bare about 3 feet at low water, stands in the midchannel with surrounding depths of 8½ feet off the bluff at Belfast.

(48) A marina, on the north side of North Newport River about 8.6 miles above the mouth at **Colonels Island**, has berths with electricity, gasoline, diesel fuel, water, ice, a 3½-ton mobile lift, engine repairs, and limited marine supplies. In 1983, a reported depth of about 10 feet could be carried to the marina via **Timmons River**.

### Fish haven

(49) A fish haven, with a minimum depth of 3 feet, is on the north side of Timmons River about 1.9 miles above its mouth; caution is advised.

## Charts 11511, 11510

(50) **St. Catherines Island**, which forms the coast from St. Catherines Sound to Sapelo Sound, lies in a nearly north and south line, and has a length of 9 miles and a width at its widest part of about 3 miles. The island is flat and much of it is marshy with the higher part heavily wooded.

(51) When viewed from a distance seaward, only dense woods in level silhouette are to be seen on St. Catherines Island. Closer inspection reveals a white sand beach, with sand dunes 20 feet high near the center of the island which show up from some directions. A prominent sand dune, 3 miles south of the north end of the island and about 1 mile north of McQueen Inlet, is reported to show well from seaward. **McQueen Inlet**, the only break in the shoreline visible from seaward, is unimportant, as it is blocked by shoals at low water. Dangerous shoals extend offshore for 5 miles.

(52) The island is separated from the marshes lying between it and the mainland by Walburg Creek, Johnson Creek, and South Newport River. The entrance to Sapelo Sound is between the south point of this island and the north point of Blackbeard Island.

## Chart 11510

(53) **Sapelo Sound** is about 33 miles southwestward of Tybee Light.

### COLREGS Demarcation Lines

(54) The lines established for Sapelo Sound are described in **80.717**, chapter 2.

(55) A lighted buoy is 15 miles off the entrance. (See chart 11509.) About 8 miles from the entrance the break in the shore can be seen on a clear day. The tower of the abandoned lighthouse is 10 miles southwestward of the sound. Vessels should stay in a depth of over 5 fathoms until the bar channel buoys are seen because shoals extend about 5 miles offshore.

(56) With the aid of the chart, and on a rising tide and a smooth sea, vessels should have no difficulty in entering during daylight by following the buoys. In 2001, a changeable area with shoaling to about 1 foot was reported in about 31°32'29"N., 81°08'01"W., 0.75 mile eastward of **Experiment Shoal**. A swash channel between Experiment Shoal and St. Catherines Island has a least depth of 1 foot. Another unmarked channel south of the main channel has a reported depth of 8 feet and is used by fishing boats.

(57) No towns of any importance are on the sound or tributaries. In northeasterly weather, anchorage can be made in the lower part of South Newport River with fair protection.

### Currents

(58) In the entrance to the sound the velocities of flood and ebb are 2.1 and 2.5 knots, respectively. The Tidal Current Tables should be consulted for current predictions. (See the Tide Tables for tidal differences on Sapelo River and its tributaries.)

(59) The Intracoastal Waterway enters Sapelo Sound from the northward through South Newport River and continues southward to Doboy Sound through Sapelo River, Front River, Creighton Narrows, and Old Teakettle Creek.

(60) **South Newport River** flows into the sound from northward just inside the entrance. In 1983, the reported controlling depth in the river was 5 feet through **Cross Tide Creek** to its junction with North Newport River, thence 5 feet down that river to the Intracoastal Waterway. **Sapelo River**, entering the sound from westward, is used only by small fishing boats, except for the lower part below **Front River** which forms a part of the Intracoastal Waterway.

(61) In 1963, a draft of 13 feet could be carried from the deeper waters of Sapelo River into the mouth of Front River, at the head of which a dredged channel through **Creighton Narrows** offers passage to Old Teakettle Creek and thence to Doboy Sound. The Intracoastal Waterway follows this route.

(62) **Mud River**, flowing into the head of Sapelo Sound from southward, is a broad shallow body of water.

(63) **Julienton River** enters Sapelo River from the northwest about 3 miles above the mouth. Shrimp boats base at **Shellman Bluff** on **Broro River**, locally known as **Shellman Creek**, which enters Julienton River about 4.5 miles above its mouth. Berths with electricity, gasoline, water, ice, two 2-ton lifts, and limited marine supplies are available. In 1983, it was reported that with local knowledge 5 feet could be carried up Julienton River and Broro River to the shrimp dock. Other facilities are at **Continment Bluff** and **Dallas Bluff** on Julienton River, a short distance above Broro River. These include gasoline, diesel fuel, water, ice, provisions, and lodging.

(64) **Pine Harbor** is on Sapelo River about 10.5 miles above the mouth. In 1983, the reported controlling depth was 1 foot from the junction of Sapelo River and the Intracoastal Waterway to the landing at Pine Harbor.

(65) The coastline from Sapelo Sound to Doboy Sound is formed by the shores of **Blackbeard Island** and **Sapelo Island. Blackbeard Creek**, which empties into **Cabretta Inlet**. From all directions, they appear as a single island and are described as such. Taken together they are 10 miles long in a south-southwesterly direction and 4 miles wide. Large portions of both islands are heavily wooded. These islands present no well-marked distinguishing features, except the usual sand beach backed by dense woods in level outline and the abandoned lighthouse tower near the south point of Sapelo Island. The western part of Sapelo Island consists almost entirely of broad marshes with numerous creeks. Most important of these is Duplin River, which has deep water for several miles and affords means of communication to the island. Sapelo Island is separated from the marshes lying between it and the mainland by Mud River and New Teakettle Creek.

(66) Blackbeard Island and the marshes surrounding Blackbeard Creek make up **Blackbeard Island National Wildlife Refuge.**

(67) **Grays Reef National Marine Sanctuary** (see chart 11509) has been established to protect and preserve the live bottom ecosystem and other natural resources of Grays Reef. The sanctuary comprises a 16.68-square-mile area about 18 miles east of Sapelo Island. (See **15 CFR 922**, chapter 2, for limits and regulations.)

(68) **Doboy Sound** is 45 miles southwestward of Tybee Light and 16 miles northeastward of St. Simons Light. The entrance, between Sapelo Island and Wolf Island, is about 1 mile wide and obstructed by shifting shoals extending about 4.5 miles offshore. When approaching the sound, vessels should stay in a depth of 5 fathoms or more until the entrance buoys are sighted. If there is too much sea to cross the bar, vessels are advised to enter via St. Simons Sound and the Intracoastal Waterway.

(69) A cluster of fish havens is eastward of Doboy Sound; the outermost is marked by a private unlighted buoy about 20 miles eastward of the entrance to the sound. (See chart 11509.) A sunken wreck is about 6.5 miles east of the entrance to the sound in about 31°21'24"N., 81°09'06"W.

(70) The marked channel over the bar at the entrance to Doboy Sound is not considered safe for strangers except on a rising tide and a smooth sea. The bar has been changing over the past years. In 1983, the reported controlling depth was 5 feet. An unmarked swash channel

with a least depth of 5 feet makes into the sound close under the south point of Sapelo Island. The channels are used by local shrimp boats.

(71) Doboy Sound extends northwestward about 5 miles from the bar with a width of about 0.8 mile.

### Currents

(72) Tidal currents in the sound have a velocity of 2 knots at the entrance. Predicted currents may be obtained from the Tidal Current Tables.

### Anchorage

(73) Good anchorage is found anywhere in the channel of the sound upstream from **Commodore Island** except in the cable area.

(74) The Intracoastal Waterway enters Doboy Sound through Old Teakettle Creek and passes southward through North River, Darien River, Rockdedundy River, and Little Mud River to Altamaha Sound.

(75) **Duplin River**, entering Doboy Sound from northward, is a small stream about 5 miles long. Submerged piling extend off the northwest side of the entrance. In 1983, the reported midchannel controlling depth was 9 feet from the entrance to **Pumpkin Hammock**, thence 6 feet for another 2 miles. A ferry from the mainland docks on the eastern bank of the river, 0.3 mile upstream from the entrance. The dock has a depth of 15 feet alongside. An overhead power cable with a clearance of 38 feet crosses the river about 1.7 miles above the mouth.

(76) **Sapelo Island**, locally known as **Lighthouse Creek**. The town is reached on high tide only. In an emergency some services and supplies can be obtained here. In 1983, the reported depth was less than 2 feet at the creek entrance and bare halfway to the town.

(77) **Old Teakettle Creek** enters the sound from northward about 1 mile northwestward of Duplin River and forms a part of the Intracoastal Waterway. **Shellbluff Creek**, which enters Old Teakettle Creek from the westward about 0.7 mile from its northern entrance, in 1983, had a reported controlling depth of 5 feet to the small packing plant at **Valona**. The docks are privately owned by a shrimp-boatbuilding yard with a small marine railway for hauling them out. Diesel fuel, water, and ice are available.

(78) **Atwood Creek** and **Hudson Creek** are small streams emptying into the head of Doboy Sound from the northwestward. In 1983, the reported controlling depth in Atwood Creek was 5 feet for a distance of 2 miles, and 6 feet in Hudson Creek to the mouth of the small creek leading to a small shrimp-packing plant at **Meridia Landing** , which is about 1.5 miles by road from **Meridian**. Gasoline, diesel fuel, water, and ice are available from the plant only in an emergency. A ferry to Sapelo Island docks in Hudson Creek. In 1981, a sunken wreck was reported in Hudson Creek about 1.4 miles above the mouth.

(79) **Carnigan River** enters the head of the sound from southwestward and is connected with North River by a branch known as **Buzzard Roost Creek**. **North River** enters Doboy Sound west of Doboy Island. It extends westward 6 miles to the town of **Ridgeville,** where it joins **May Hall Creek,** which, running southward, connects with Darien River 5 miles above its mouth. Overhead power cables with a minimum clearance of 51 feet cross May Hall Creek at Ridgeville and 0.5 mile above its junction with Darien River. A small-boat landing at the town has gasoline, diesel fuel, and water. **Doboy Island** is wooded and has several buildings on its southwest end. A small private landing is on the west side of the island.

(80) **Back River**, on the southern side of Doboy and Commodore Islands, forms another and little used entrance from the sound to North and Darien Rivers.

(81) **South River**, also little used, empties into Doboy Sound from southwestward about 0.8 mile inside the entrance. It extends in a general westerly direction for 3 miles, where it joins **Little Mud River**, a part of the Intracoastal Waterway.

(82) **Darien River** extends southwestward for a distance of 11.5 miles, where it joins the Altamaha River. In 1983, the reported controlling depth was 7 feet from Doboy Sound through the Intracoastal Waterway and Darien River to the highway bridge at Darien. Care is necessary when navigating this river due to the shoals and numerous floating snags. Water is fresh in the river at Darien after the ebb has been running for about 3 hours. The best route from Doboy Sound to the Darien River is via the Intracoastal Waterway.

(83) **Darien** is 9 miles above Doboy Island on the north bank of Darien River. Fishing and pulpwood are the main industries. Some shrimp and shad fishermen base here. A good highway passes through the town from Savannah to Brunswick, 18 miles away. Gasoline, diesel fuel, ice, fresh water, and supplies are available. Two marine railways, owned by a packing company, can haul out fishing boats up to 75 feet. The reported depth of water alongside the wharves was 8 to 15 feet in 1983. U.S. Route 17 highway bridge crossing the river at the town has a fixed span with a clearance of 31 feet. The overhead cable about 100 yards west of the bridge has a clearance of 51 feet.

## Chart 11508

(84) Between Doboy Sound and Altamaha Sound is **Wolf Island**, which is about 2.5 miles long in a north-south direction. Wolf Island including Egg Island, part of the Wolf Island National Wildlife Refuge, are almost entirely marsh. They are designated Federal Wildlife Wilderness Areas and reported not accessible to the public.

(85) **Altamaha Sound** is 48 miles southwestward of Tybee Light and 12 miles northeastward of St. Simons Light. The entrance and the sound are obstructed by shoals which are dangerous to navigation. A shifting channel through the shoals extends 4 miles from the

entrance. It is advisable to enter Altamaha Sound via the Intracoastal Waterway.

(86) **Altamaha River** is formed by the confluence of the **Oconee River** and **Ocmulgee River**, 110 miles above the town of Darien and 119 miles above its mouth, and flows in a general southeasterly direction, entering the western end of Altamaha Sound. The river is subject to freshets, and depths change radically.

(87) In 1983, the reported controlling depth was 3 feet during 8 months of the year to **Milledgeville,** a city on the Oconee River 126 miles above the junction with the Altamaha River, and 3 feet to Macon, a city on the Ocmulgee River 178 miles above the junction. The depths are 2 to 12 feet less during the summer low-water period.

(88) U.S. Route 17 highway bridge over **South Altamaha River**, 2.5 miles south of Darien, has a fixed span with a clearance of 35 feet. An overhead power cable on the west side of the bridge has a clearance of 55 feet. Interstate Route 95 highway bridge crossing South Altamaha River, about 1.2 miles westward of U.S. Route 17 highway bridge, has a clearance of 35 feet. (See **117.1 through 117.59, 117.351, 117.363, and 117.365**, chapter 2, for drawbridge regulations for drawbridges crossing the Altamaha, Oconee, and Ocmulgee Rivers.)

(89) **Little Mud River** enters Altamaha Sound from northward about 2.5 miles inside the entrance. The Intracoastal Waterway passes through it. **Buttermilk Sound**, which enters Altamaha Sound from the southwestward, has an average width of 0.5 mile. At its head the sound connects with Frederica River and Mackay River; the latter connects with Back River. These three rivers enter the western end of St. Simons Sounds from northward, and Mackay River with Buttermilk Sound forms part of the Intracoastal Waterway.

## Chart 11502

(90) The coast between Altamaha and St. Simons Sounds is formed by the shores of **Little St. Simons Island**, **Sea Island**, and St. Simons Island. These islands are separated only by stretches of marsh traversed by small streams, and from seaward appear as one body of land although from certain points the marshes, alternating with patches of trees, give the land an unusually broken appearance.

(91) **St. Simons Island** is the main body of land between the two sounds, and in general description the other two islands may be considered as parts of it. The three taken together are 11 miles long and 6 miles wide at the northern end, diminishing gradually to 2.5 miles near the southern end. Immediately along the coast and in the central parts it is heavily wooded. Between the two wooded portions is a stretch of marsh from 1 to 1.5 miles wide extending nearly the whole length of the island, and to the westward it is separated from the mainland by extensive marshes, through which flow the Frederica and Mackay Rivers, joining Altamaha and St. Simons Sounds.

## Charts 11508, 11506

(92) The northern portion of St. Simons Island is marshy and traversed by **Hampton River**, a sizable stream flowing in an easterly and southeasterly direction, which separates St. Simons and Little St. Simons Islands and enters the sea 5 miles below Altamaha Sound. The dangerous shoals on both sides of the channel are unmarked; strangers should not attempt entrance from seaward without local knowledge. In 2003, the reported controlling depth was 10.5 feet from Buttermilk Sound to Village Creek.

(93) **Village Creek** flows into Hampton River from the southward, about 1.5 miles above its mouth. It goes through a stretch of marsh separating Sea Island and St. Simons Island. After a crooked course of several miles, it joins the **Blackbank River**, a narrow and twisting stream flowing to the southward between the two islands and entering the sea 4 miles south of Hampton River. In 1983, the reported controlling depth was 4 feet for about 4.6 miles above the mouth, thence 1 foot to and through the cut to Blackbank River and the Sea Island Bridge. Village Creek is dry above the cut at low water. The highway bridge crossing Blackbank River to Sea Island has a 15-foot fixed span with a clearance of 7 feet; overhead cables about 200 feet south of the bridge have a clearance of 16 feet.

## Charts 11506, 11502

(94) **St. Simons Sound**, 0.8 mile wide at the entrance, is 61 miles southwestward of Tybee Light and 27 miles northward of Amelia Island Light. The sound forms a good harbor and is the approach to the city of Brunswick. The entrance is obstructed by dangerous shifting shoals, forming a bar which extends for a distance of 5.5 miles offshore. A dredged channel through the bar has a federal project depth of 38 feet. A lighted buoy marks the entrance.

(95) **Brunswick** is on the eastern bank of East River and Academy Creek opposite Andrews Island, 7.5 miles above St. Simons Light. It is 4.5 miles west of the Intracoastal Waterway route which connects it with ports to the north and south. The city is the second largest port of commercial importance in Georgia. It is 104 miles south of Savannah and 82 miles north of Jacksonville by coastwise routes. The principal commodities handled in the port are seafood, woodpulp, salt, gypsum rock, petroleum products, fertilizer, and chemicals. The principal industries are wood creosoting, seafood processing and manufacture of naval stores, paints, marine and stationary boilers, steel fabrication, woodpulp, and chemicals.

(96) **Brunswick Harbor** comprises the improved channel across the bar, St. Simons Sound, Brunswick River, and Turtle River.

(97) **Brunswick River** enters the sound from southwestward just inside the entrance and provides access for oceangoing vessels to the city of Brunswick. For a distance of 2.8 miles above its mouth, the river has an average width of 1.3 miles, but the deepwater channel averages only 0.3 mile in width. Above **Brunswick Point** the river has an average width of 0.7 mile to **Andrews Island**, which divides it into two branches. The southern branch is known as **Turtle River** and the northern branch, on which the city of Brunswick is situated, is known as **East River** to the mouth of **Academy Creek.**

### Bridges

(98) The only bridge crossing the main channel is the Sidney Lanier (U.S. Route 17) highway bridge at Brunswick, 5.4 miles above the mouth, which has a fixed span with an authorized clearance of 185 feet. State Route 303 highway bridge, crossing Turtle River just above the head of the improvement, has a fixed span with a clearance of 35 feet at the center; the nearby overhead power cable clearance is 55 feet over the main channel. The twin fixed spans of Interstate 95 highway bridge, 0.6 mile upstream, have a clearance of 35 feet. There is little river traffic above these bridges.

### Prominent features

(99) **St. Simons Light** (31°08'03"N., 81°23'37"W.), 104 feet above the water, is shown from a white conical tower attached to a brick dwelling on the north side of the entrance to the sound. The abandoned lighthouse on the north end of Little Cumberland Island, at the entrance to St. Andrew Sound, and the five tanks on Jekyll Island can be seen to the southward. Near the beach eastward and northeastward of St. Simons Light are many homes and summer residences extending to the vicinity of Hampton River. The three water tanks on St. Simons Island about 0.4 mile and 3.5 miles north of the light, the towers of the fixed bridge crossing Brunswick River, and the tall stacks of the Hercules Powder Company in Brunswick, and the pulpmill complex in northwestern Brunswick are prominent.

### COLREGS Demarcation Lines

(100) The lines established for St. Simons Sound are described in **80.720**, chapter 2.

### Brunswick Harbor Navigational Guidelines

(101) The Brunswick Bar Pilots, with the concurrence of various maritime interests, have established voluntary navigational safety guidelines for the Port of Brunswick. These guidelines are intended to minimize the risk of collision or grounding by vessels using the various waterways associated with the Port of Brunswick. They are not intended to supersede or contravene any law, regulation, or rule promulgated by competent authority.

(102) (1) **Transiting the Sidney Lanier (U.S. Route 17) Bridge:** The advice and recommendations of the Brunswick Bar Pilots should be followed by mariners intending to transit the Sidney Lanier Bridge. Specifically:

(103) (2) **Transiting St. Simons Sound and the Intracoastal Waterway (IW):** The convergence of the deep draft ship channel of St. Simons Sound and the IW can pose significant hazards to oceangoing ships and tug and tows transiting these waterways. To preclude unplanned encounters between vessels in these waterways, it is recommended that every transiting vessel initiate a SECURITE call on VHF-FM channel 13 at the following locations:

(104) (a) Inbound–upon passing the St. Simons Lighted Buoy STS;

(105) (b) Upon departing any dock in the Port of Brunswick;

(106) (c) Northbound on the IW - upon passing Jekyll Creek Light 19:

(107) (d) Southbound on the IW - upon transiting the fixed bridge over the Mackay River at Lanier Island (IW statue mile 674.5). The context of the SECURITE call should include: The identity of the vessel, its destination, expected ETA to the aforementioned converging waterways, and any special information concerning its maneuverability.

(108) (3) **Docking or undocking vessels at Colonels Island:** The Georgia Ports Authority facility on Colonels Island is a major terminal for automobile importation. This terminal has three berths, each parallel to the south bank of the South Brunswick River and is accessed from the Turtle River via a 0.9 mile channel approximately 400 feet in width. Vehicle carriers calling at this facility are brought up the full length of the channel stern first with tug assistance. Docking and undocking from either berth should not be attempted whenever the wind is from the northeast at 25 knots or greater.

(109) (4) **Meeting and passing on narrow waterways:** Oceangoing vessels over 400 feet LOA or drawing more than 20 feet and tug and tows with a combined tonnage of over 500 GRT should not meet or pass vessels of like size on the following narrow waterways in the Port of Brunswick area.

(110) (a) Cedar Hammock Range

(111) (b) Turtle River Lower Range

(112) (c) Colonels Island Terminal Access Channel

(113) (d) The St. Simons Outer Bar

### Channels

(114) A Federal project provides for a channel 38 feet deep through the bar, thence 36 feet deep in Brunswick River and East River to the foot of Second Avenue, thence 27 feet to Academy Creek, and thence 24 feet in Academy Creek to the dam 0.6 mile above the mouth; and 30 feet deep in Turtle River to the LCP Chemicals-Georgia

Wharf. (See Notice to Mariners and latest editions of the charts for controlling depths.)

(115) A lighted whistle buoy is about 14.5 miles off the entrance to St. Simons Sound. The channel through the bar is marked by **303° directional lights, a 285°** lighted range, and lighted and unlighted buoys, and the channels inside the sound are marked with lighted ranges, lights, and lighted and unlighted buoys.

### Dangers

(116) An unmarked wreck, reported covered 24 feet, is in 31°03'10"N., 81°13'45"W., about 1.4 miles eastward of the entrance to the bar channel. Fish havens, marked by private unlighted buoys, are 3 miles northeastward and 16 miles east-southeastward, respectively, of the entrance to the bar channel. Shoal areas and spoil areas are in the approaches from the outer lighted whistle buoy to the midchannel lighted whistle buoy at the entrance to the bar channel. These should be avoided in heavy weather.

(117) A rock ledge, about 600 to 800 feet long and covered 20 feet, is parallel to the south side of Cedar Hammock Range in about 31°06'27"N., 81°25'53"W. In 2009, this obstruction was reported to be removed.

### Anchorages

(118) There is good anchorage anywhere along the sides of the channel off the range lines in St. Simons Sound or Brunswick River. Depths of 22 to 79 feet may be found in the sound between Jekyll Island and St. Simons Islands, and depths of 17 to 30 feet in the Brunswick River directly westward of Jekyll Island. In the area westward of the Brunswick Harbor Range, across the channel from Brunswick, anchorage is only for small craft.

### Currents

(119) Tidal currents normally follow the general direction of the dredged channel across the bar with a velocity of 2 knots. During northeasterly weather there is a strong southerly set across the bar channel and in southeasterly weather a strong northerly set. Current predictions for a number of locations in the vicinity of St. Simons Sound may be obtained from the Tidal Current Tables.

### Weather, Brunswick and vicinity

(120) The effect of the Atlantic on Brunswick is reflected in warmer winter-minimum and cooler summer-maximum temperatures than inland locations. There is even a slight, but noticeable, difference between the immediate coast and the city. On St. Simons Island temperatures are a few degrees cooler than in Brunswick, particularly in summer. This results in more 90°F (32.2°C) days in the city, but this average, of 78 days, is still a 15- to 20-day improvement over cities farther inland. However, St. Simons records about 16 days each year where minimums drop to freezing or below, compared to about 11 days in the city. The average high temperature in Brunswick is 76°F (24.4°C) and the average low is 59°F (15°C). July is the warmest month with an average high of 90°F (32.2°C) and an average low of 75°F (23.9°C). January is the coldest month with an average high of 61°F (16.1°C) and an average low of 43°F (6.1°C). Each month, May through August has record temperatures at or above 100°F (37.8°C) and the all-time extreme maximum is 103°F (39.4°C) recorded in June 1985 and July 1980. Each month, November through March has recorded temperatures below freezing and the recorded minimum is 6°F (-14.4°C) recorded in January 1985.

(121) Rainfall differences between coastal and land sites are less noticeable than temperature differences and approximately 50 inches (1270 mm) is recorded annually at Brunswick. Nearly half the annual precipitation occurs as showers and thunderstorms on about 8 to 10 days per month from June through September. September is the wettest month averaging 7.3 inches (185.4 mm) of rainfall while November is the driest averaging less than 2.5 inches (63.5 mm). Snowfall is almost nonexistent but has been recorded in each month, December through March. Four inches (101.6 mm) fell in December 1989. Fog is common from November through March. On the coast, visibilities drop below 0.5 mile (0.9 km) on 2 to 4 days per month. This type of fog is most frequent in the early morning hours and usually lifts by late afternoon. Any large drop in temperature may bring fog.

(122) Since 1842, 69 tropical storms have come within 50 miles (93 km) of Brunswick, Georgia, 22 of these storms since 1950. No major hurricane has made a direct hit at Brunswick, but numerous weaker storms have made their presence known. The distribution of direction is rather uniform. Nearly as many storms have made initial landfall in the northeastern Gulf of Mexico and crossed northern Florida before affecting the Brunswick area as those that approach the city from the south or southeast.

### Pilotage, Brunswick

(123) Pilotage is compulsory for all foreign vessels and U.S. vessels over 200 gross tons. Pilotage is optional for U.S. vessels in coastwise trade which have on board a pilot licensed by the Federal Government.

(124) The area is served by Brunswick Bar Pilots Association, at 8 Glynn Ave. Brunswick, Georgia 31527; telephone 912-280-9464 (24 hours), fax 912-280-9459. e-mail hwynn@brunswickpilots.com. The office monitors VHF-FM channels 12 and 16 between 8:00 a.m. and 5:00 p.m. The Brunswick Coast Guard Station on VHF-FM channel 16 will relay messages; telephone, 912-267-7999.

(125) The pilot boats are stationed in Frederica River just below the causeway bridge. The pilot boats monitor VHF-FM channels 11, 12, and 13. The pilot boats are GLYNN and BRUNSWICK, both 50 feet long, with yellow hull and superstructure, and black trim with the word PILOT on the superstructure. Both boats display the standard day and night pilot signals. The pilot boarding

and cruising area is near St. Simons Lighted Buoy STS (31°02'49"N., 81°14'25"W.): the buoy is equipped with a racon. Pilots board 24 hours a day from the pilot boats. Some delays may be incurred because of seasonal fog. Incoming vessels are requested to rig the pilot ladder 1 meter above the water, and cruise at a speed of about 5 to 9 knots.

(126) Pilotage should be arranged in advance, normally, through ships' agents; a 2-hour minimum ETA is required.

### North Atlantic Right Whales

(127) **Recommended two-way Whale Avoidance Routes** have been established in St. Simons Sound to reduce the likelihood of ship strikes of endangered North Atlantic right whales. All vessels are encouraged to use recommended routes when traveling into or out of Brunswick Harbor. The Brunswick Bar Pilots Association participates in the North Atlantic right whale Early Warning System. (See **North Atlantic right whales**, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.)

(128) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in the Southeastern United States Seasonal Management Area between November 15 and April 15. The area is defined as the waters bounded to the north by 31°27'N., to the south by 29°45'N., and to the east by 80°51.6'W. (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.)

### Towage

(129) Tugs up to 4,000 hp are available on a 24-hour basis; tugs are required for docking and undocking oceangoing vessels. Arrangements for tugs are made in advance through ships' agents.

### Quarantine, customs, immigration, and agricultural quarantine

(130) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(131) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) Brunswick has a city hospital.

(132) Brunswick is a **customs port of entry**.

(133) **Harbor regulations** are under the control of the Georgia Ports Authority, who can be contacted through the port authority office or by telephone 912-264-7295.

### Wharves

(134) Only the major deepwater port facilities at Brunswick are described. These include the facilities along the southwest side of the city which are owned and operated by the Georgia Ports Authority, and one privately operated facility on the east side of Turtle River above Brunswick. These facilities have rail and highway connections, and water and electrical shore power connections. Cargo is generally handled by ship's tackle; special handling equipment, if available, is mentioned in the description of the particular facility. The alongside depths given for each facility described are reported depths. (For information on the latest depths, contact the operator.) The remainder of the facilities along the Brunswick waterfront and on the east side of Turtle River are used for servicing commercial fishing vessels and small craft, and for handling seafood and barge traffic; these are not described. For a complete description of the port facilities at Brunswick, refer to Port Series No. 14, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(135) **East side of East River:**

(136) **Brunswick Lanier Terminal** (31°07'42"N., 81°29'33"W.): 250 feet of berthing space with dolphins; 30 feet alongside; deck height, 13 feet; pipeline to three storage tanks with 310,000 barrels capacity; railway and highway connections; receipt and shipment of petroleum products, bunkering vessels; owned by Georgia Ports Authority and operated by ST Services.

(137) **Brunswick Lanier Dock** (31°07'48"N., 81°29'34"W.); 500 feet of berthing space; 30 feet alongside; deck height, 13 feet; portable conveyor with 20,000-ton capacity to open storage area; covered storage area to 46,000 tons; railway and highway connections; receipt of dry bulk commodities including gypsum rock, cement, fertilizer, and perlite; owned by Georgia Ports Authority and operated by Marine Port Terminals, Inc., Division of Logistec Stevedoring U.S.A., Inc.

(138) **Brunswick East River Terminal, Berths 1, 2, and 3** (31°07'56"N., 81°29'36"W.): 1,665 of berthing space; 30 feet alongside; deck height, 13 feet; 46-ton gantry crane, 156-ton pedestal crane, full portal ship-unloading tower with 750 tons per hour rate, 18-ton mobile crane, receiving hopper to covered storage to 100,000 tons, open storage to 40,000 tons, forklifts to 30 tons; railway and highway connections; receipt and shipment of conventional, break-bulk, and roll-on/roll-off general cargo and dry bulk commodities; owned by Georgia Ports Authority and operated by Marine Port Terminals, Inc., Division of Logistec Stevedoring U.S.A., Inc.

(139) **Brunswick Oil Wharf** (31°10'26"N., 81°31'15"W.): 200 feet of berthing space with dolphins; 20 feet alongside; deck height, 12 feet; pipeline to a 20,000 barrels storage tank; railway and highway connections; receipt of fuel oil for plant consumption; owned and operated by Georgia-Pacific Corp., Brunswick Operations.

### Supplies

(140) Provisions and some marine supplies are available at Brunswick. Oceangoing vessels can obtain Bunker C oil by barge, and diesel oil by truck. Gasoline and diesel fuel are available to commercial fishing vessels and recreational craft.

### Repairs

(141) There are no drydocking or major repair facilities for oceangoing vessels in the port; the nearest such facilities are at Jacksonville, FL, or Savannah, GA. Machine, welding, and electrical shops off the waterfront can make limited above-the-waterline repairs.

(142) There are no special facilities at the port for use in wrecking or salvage operations. Such equipment can be obtained from Savannah or Jacksonville.

### Communications

(143) The port is served by the several bus, rail, and truck lines, and by U.S. Highway Routes 17, 25, and 84. Commercial flights operate out of the Brunswick Golden Isles Airport in Bruncswick and the airport on St. Simons Island, about 6 miles east of Brunswick.

### Small-craft facilities

(144) Gasoline, diesel fuel, water, ice, a pump-out station, marine supplies, lift to 50 tons, and hull, engine and electronic repairs are available at Brunswick. Facilities along the Intracoastal Waterway, eastward of the city, are described in chapter 12.

(145) **St. Simons Island** and **St. Simons** are summer resort towns on the southeast and south sides of St. Simons Island, respectively. The concrete T-head fishing pier at St. Simons had reported depths of 14 to 21 feet alongside in 1983.

(146) **Frederica River** joins St. Simons Sound from the northward about 1 mile inside the entrance. Above its junction with Mackay River at the north end of Lanier Island, Frederica River extends northeastward for about 7 miles and rejoins Mackay River. This section is an alternate route of the Intracoastal Waterway. In 2004-2007, the reported midchannel controlling depth in Frederica River was 4.4 feet.

(147) The fixed highway bridge crossing Frederica River from St. Simons Island to Lanier Island has a clearance of 9 feet. A strong east-to-west ebb current sets across the channel.

(148) During flood tide, the current flows northward in the direction of the channel and is very strong. Vessels should exercise great caution while passing through this bridge, especially with a light tow proceeding south. When proceeding with the tide, tows should stop at the dolphins to await favorable current or be broken up and taken through singly.

(149) On **Lanier Island,** just south of the highway bridge, there is a marina with a 420-foot pier with reported approach depth of 10 feet in 2010. The yard has berthage with electricity, gasoline, diesel fuel, water, and ice, marine supplies, pump-out station, and dry and wet storage. Engine and electronic repairs can be made.

(150) A **special anchorage** is close southwest of the highway bridge. (See **110.72b**, chapter 2, for limits and regulations.)

(151) **Mackay River,** which enters the sound from northward, is crossed about 1.5 miles above the mouth, at Lanier Island, by a fixed highway bridge with a clearance of 65 feet. The overhead power cables near the bridge have a least clearance of 97 feet. Mackay River joins Frederica River at the north end of Lanier Island; the rivers then join St. Simons Sound close southward of the island. Mackay River is part of the Intracoastal Waterway.

(152) **Little River** is west of Mackay River and flows into Back River. A highway bridge about 0.7 mile above the mouth has a 30-foot fixed span with a clearance of 6 feet. An overhead power cable immediately south of the bridge has a clearance of 33 feet.

(153) **Back River,** an alternate route of the Intracoastal Waterway, enters St. Simons Sound from northward. In 2004, the channel in Back River had a midchannel controlling depth of 2.5 feet to its junction with Mackay River. The fixed highway bridge about 1.5 miles above the mouth has a clearance of 40 feet. Above the bridge the channel to the head of the improvement is marked by daybeacons.

(154) **Terry Creek** flows into Back River 0.5 mile above the highway bridge and leads westward 1.5 miles to the city of Brunswick and to a basin on the east side of the city. The channel through Terry Creek has been dredged for a distance of about 1.1 miles from Back River, at which point it junctions with a dredged section that leads northwestward into **Dupree Creek** for about 0.35 mile. In 2004, the reported midchannel controlling depth in Terry Creek was 2.6 feet; thence in 1995 depths of less than 1 foot were in Dupree Creek. About 1.3 miles above the mouth, Terry Creek is crossed by a highway bridge with 30-foot fixed span and a clearance of 6 feet. The overhead power cable close southward of the bridge has a clearance of 26 feet. The basin is within the city limits of Brunswick and offers good protection from storms. There is a small boat-launching ramp available.

(155) **Plantation Creek** and **Clubbs Creek** offer a protected short cut between Back River and Brunswick River, and can be used safely by small craft on a rising tide. In 2004, the reported midchannel controlling depth was 3.3 feet in Plantation Creek and 1.5 feet in Clubbs Creek.

(156) **South Brunswick River** enters Turtle River from westward opposite Andrews Island. The I-95 highway bridge, 2.8 miles above the mouth, has twin spans with a clearance of 15 feet. State Route 303 highway bridge, 3 miles above the mouth, has a 36-foot fixed span with a clearance of 15 feet. Overhead power cables on the east and west sides of the latter bridge have a least clearance of 30 feet.

(157) **Fancy Bluff Creek,** a tug and barge route from Little Satilla River, enters South Brunswick River from the southwest 1.3 miles above the mouth. U.S. Routes 17 and 84 highway bridge, about 2.3 miles from the north entrance, has a fixed span with a clearance of 18 feet. The overhead power cable close southwest of the bridge has a clearance of 44 feet. A railroad bridge with a 20-foot fixed span and a 10-foot clearance is about 0.2 mile northward of the highway bridge. The reported

controlling depth through the creek to Little Satilla River was 4 feet in 1983.

(158) **Cedar Creek** enters Brunswick River from the south, about 1.2 miles from Brunswick Point. State Route 50 highway bridge, 1 mile above the entrance, has a 30-foot fixed span with a clearance of 10 feet. An overhead power cable immediately west of the bridge has a clearance of 35 feet. In 2005, the reported controlling depth was 1.0 foot.

(159) **Jekyll Creek** enters Brunswick River from southward about 2.5 miles above its mouth. With Jekyll and St. Andrew Sounds, it forms part of the Intracoastal Waterway to Fernandina Beach. (See chapter 12.)

## Chart 11504

(160) From St. Simons Island to St. Andrew Sound the coast is formed by the shores of **Jekyll Island** which extends nearly north and south for a distance of 6.5 miles and has a width of 2 miles. Jekyll Island is a State Park; several large park buildings, formerly private homes, are on the west side of the island, and on the east side are large motels and recreational buildings, bath houses, and the large prominent Aquarama (a large indoor swimming pool and auditorium). The island is wooded all along its eastern shore, and dark woods which are quite level in silhouette stand out in the background. Several fishhavens are within 13 miles eastward and southeastward of Jekyll Island. Shoals extend 3 to 5 miles offshore. Three conspicuous gold spherical water tanks on top of slender green standpipes are about 2.2, 3.1, and 4.6 miles from the north end of the island. The towers of the lift bridge over the Intracoastal Waterway on the west side of the island can be seen offshore.

(161) The western portion of Jekyll Island at the north and south ends is marshy, bordered by Brunswick River, Jekyll Creek, and Jekyll Sound. A marina on the Intracoastal Waterway on the west side of the island is described in chapter 12.

(162) **St. Andrew Sound,** between Jekyll Island and Little Cumberland Island, is about 7 miles southward of St. Simons Sound and 17 miles northward of St. Marys Entrance.

### COLREGS Demarcation Lines

(163) The lines established for St. Andrew Sound are described in **80.720**, chapter 2.

(164) The entrance to the sound is over a shifting bar which extends about 5 miles offshore. Vessels should stay in 5 fathoms or more until the outer buoy is sighted. The channel into the sound is marked by buoys. Vessels with a draft of about 10 feet should have little difficulty entering the sound. In 1983, the reported controlling depth was 12 feet in the buoyed entrance channel. The entrance is used only by local shrimp boats. An abandoned lighthouse is on the north end of Little Cumberland Island.

(165) In 1985, a sunken wreck was reported about 1.9 miles eastward of the abandoned lighthouse in about 30°58'32"N., 81°22'37"W.

(166) In the sound are extensive shoals, between which channels lead to the principal tributaries: Jekyll Sound on the north, Satilla River on the west, and Cumberland River on the south.

### Currents

(167) The current velocity is about 2 knots in the entrance; predictions are given in the Tidal Current Tables.

(168) The best anchorage in the sound is in the channel on the western side of Little Cumberland Island. The anchorage has depths of 17 to 27 feet with good holding ground. Good anchorage is also found in the entrance of Jekyll Point.

(169) The Intracoastal Waterway, which crosses the sound, enters from the northward through Jekyll Creek and Jekyll Sound and passes southward through Cumberland River to Cumberland Sound and into Amelia River.

(170) **Jekyll Sound,** which enters St. Andrew Sound from northward just inside the entrance, has many shoals. Three channels lead to its three principal tributaries.

(171) Good anchorage is found in the entrance to Jekyll Sound westward of Jekyll Point. **Jekyll Creek** enters the sound from northward, forming a part of the Intracoastal Waterway. Its northern part connects with Brunswick River. **Jointer Creek** (see also chart 11506) enters Jekyll Sound from northwestward. It is crooked and has several narrow branches, all of which except Cedar Creek are blocked by the Jekyll Island Highway. A small boat can navigate from Brunswick River to Jekyll Sound by way of Cedar and Jointer Creeks, or through Turtle River, South Brunswick River, Fancy Bluff Creek, and Little Satilla River.

(172) **Little Satilla River** (see also chart 11506) enters Jekyll Sound from westward. In 1983, it was reported that with local knowledge about 10 feet could be taken from the entrance to Fancy Bluff Creek. Small craft going to landings on the river enter from South Brunswick River through Fancy Bluff Creek.

(173) **Satilla River** enters St. Andrew Sound from the westward through a narrow channel in the shoals. In 1963 and 1975, shoaling to 1 foot was reported to exist just below the bend 9 miles above the entrance. **Satilla River Marsh Island Natural Area**, a Marine Protected Area (MPA), is about 1.5 miles upstream of St. Andrews Sound on the S bank of the Satilla River. Shrimp boats going to **Woodbine,** 22 miles above the mouth, use Bailey Cut, which was reported to have a controlling depth of about 4 feet, in 1983, at its eastern entrance. The river is crossed by twin fixed highway bridges with clearances of 44 feet about 19.2 miles above the mouth. U.S. Route 17 highway bridge at Woodbine has a fixed span with a clearance of 43 feet. A railroad bridge adjacent to the westward has a swing span with a clearance of 5 feet. (See **117.1 through 117.59 and 117.369**, chapter 2, for

drawbridge regulations.) Overhead power cables are 0.8 mile and 0.5 mile east of the bridges. The easternmost cable has a clearance of 57 feet, and clearance for the other cable is not known. The overhead power cable between the bridges has a clearance of 61 feet. Traffic in the area consists mainly of sand tows and shrimp fishermen. A boatyard and shrimp dock on the south bank about 0.4 mile east of the highway bridge has a marine railway that can haul out craft up to 70 feet. There is 8 to 10 feet of water at the 90-foot T-head pier. Diesel fuel and freshwater are on the dock, and gasoline can be obtained by truck. Hull and engine repairs can be made in an emergency. Food, lodging, and marine supplies can be obtained in the town. The water is brackish at Woodbine with no worms and fresh water above Burnt Fort. In 1963, the controlling depth was about 6 feet from Woodbine to **Burnt Fort**, 45 miles above the mouth of the river. State Route 252 highway bridge at Burnt Fort has a fixed span with a clearance of 16 feet.

(174) The mean range of tide is 6.7 feet about 5 miles above the mouth and 3.2 feet at Burnt Fort. The freshet variation at **Waycross,** 142 miles above the mouth, is about 12 feet. There is reported to be no appreciable rise at Woodbine during freshets.

(175) **Cumberland River** enters St. Andrew Sound from southward just inside Little Cumberland Island. Its general direction is southerly for a distance of 11 miles, where it joins Cumberland Sound. The Intracoastal Waterway follows this route, which is well marked by ranges in the more difficult sections.

(176) **Brickhill River** branches from Cumberland River about 5 miles above the mouth and rejoins it at **Cumberland Dividings**. **Floyd Creek** enters Cumberland River from westward about 4.5 miles above the north end of Little Cumberland Island, and joins with Satilla River through a cut to form an alternate passage to the Intracoastal Waterway.

(177) **Crooked River** enters Cumberland River from the westward about 10.6 miles above the mouth. A State park boat landing is at **Elliotts Bluff**, 4.3 miles above the mouth. Local fishing boats tie up at the private piers just above the park. In 1983, the reported controlling depth was 4 feet to the boat landing.

## Chart 11502

(178) Between St. Andrew Sound and St. Marys Entrance, the coastline, extending in a southerly direction for about 16 miles, is formed by the shores of Little Cumberland and Cumberland Islands. These two islands are separated only by a stretch of marsh and **Christmas Creek,** and appear as one island from seaward. The coastline shows a broad white sand beach backed by an almost continuous range of sand dunes with dense woods backing them.

(179) The north end of **Little Cumberland Island,** heavily wooded, has a prominent buff colored bluff and is marked by an abandoned lighthouse.

(180) **Cumberland Island** is almost entirely covered by woods, though somewhat marshy to the westward. The island is separated from the mainland by extensive marshes through which flow the Cumberland and Brickhill Rivers. The extreme southern point of the island, which forms the north side of the entrance to Cumberland Sound, has several conspicuous sand dunes. **Cumberland Island National Seashore**, a Marine Protected Area (MPA), extends seaward about .25 mile.

(181) From the north end for about 9 miles from the entrance to St. Andrew Sound, the coast is bordered by dangerous shoals extending 3 to 5 miles offshore. For the remaining distance to St. Marys Entrance there is a depth of 3 fathoms to within 1 mile of the beach.

## Chart 11503

(182) **St. Marys Entrance** and **Cumberland Sound** are 16 miles southward of St. Andrew Sound and 19 miles northward of St. Johns River. The sound is the approach to the city of Fernandina Beach, the city of St. Marys, the Naval submarine support base in Kings Bay, and an inland passage to St. Andrew Sound through its connection with the Cumberland River.

(183) **Fernandina Beach**, the principal city on Cumberland Sound, is on the east bank of Amelia River, 2 miles south of the entrance. It is the shipping port for woodpulp and paper products. Some coastwise and foreign shipping serve the port. A large shrimp boat fleet operates out of Fernandina Beach.

### Prominent features

(184) **Amelia Island Light** (30°40'23"N., 81°26'33"W.), 107 feet above the water, is shown from a 64-foot white conical tower 2 miles southward of the entrance to Cumberland Sound. It is reported that the light is difficult to distinguish above the surrounding tree line during the daytime. Also prominent from seaward are the homes along the beach 2 to 3 miles south of the entrance, the condominiums about 5 miles south of the entrance, and a 295-foot-high processing tower southward of the entrance, about 0.9 mile 309° from Amelia Island Light. The tower is marked at night by flashing red lights. A lighted 1,500-foot fishing pier at the inner end of the south jetty is also prominent. The smoke from the stacks of the paper companies at Fernandina Beach and St. Marys make them easily visible from all directions.

(185) **Fort Clinch**, on the south side of the entrance at the north end of Amelia Island, is a State Park, museum, and recreation area. The old fort and a large red brick building near the inshore end of the south jetty are conspicuous. Camping facilities and a small-craft launching ramp are at the northwest end of the island

on the east side of the channel to Fernandina Harbor. **Fort Clinch State Park Aquatic Preserve**, a Marine Protected Area (MPA), surrounds the State Park including portions of St. Marys River to the N, Amelia River to the W, and the Atlantic Ocean to the E.

### COLREGS Demarcation Lines

(186) The lines established for St. Marys River are described in **80.720**, chapter 2.

### Channels

(187) A federal project provides for a depth of 46 feet in the entrance channel, thence 42 feet northward through Cumberland Sound to two turning basins of the same depth in Kings Bay about 9.0 and 10.0 miles, respectively, above the outer ends of the jetties. Turning basins are located on the north and south sides of the entrance channel, about 1.7 miles above the jetties, and have project depths of 42 feet. A channel leads from inside the bar southward in **Amelia River** with a project depth of 36 feet to a turning basin; thence 35 feet through the turning basin; thence 28 feet to a turning basin off Rayonier Wharf, about 5.8 miles above the jetties. In 1992, the project above Seaboard Reach was reported to be no longer maintained. (See Notice to Mariners and the latest editions of the charts for controlling depths.)

(188) The entrance to Cumberland Sound is between two stone jetties. The jetties are reported to be in very poor condition with both almost entirely submerged at mean high water. The north jetty is marked off its outer end by a lighted buoy and the south jetty is marked off its outer end by an unlighted buoy. Both jetties are marked on their outer sides by unlighted buoys, and on the inner sides by daybeacons. Each unlighted buoy is a white can with orange bands near the top and waterline and the word "Jetty" in an orange diamond. The diamond-shaped white daybeacons have the words "Danger Submerged Jetty." Mariners are advised to exercise caution in this area, as the jetties are a menace to navigation when visibility is limited. Currents are strong off the ends of the jetties. The natural channel between the jetties is subject to frequent change.

(189) St. Marys Entrance Lighted Buoy STM (30°42'54"N., 81°14'39"W.) is 8.2 miles eastward of St. Marys Entrance. The channel through the bar and the channels inside the sound are marked with lighted ranges, lights, and lighted buoys.

(190) Fishing vessels going northward out of the sound use the natural channel off the end of the north jetty marked by a buoy. Strangers are warned against using it as there is danger of being set into the end of the jetty. In 1981, a sunken wreck was reported southeast of the outer end of the north jetty in about 30°42.9'N., 81°24.1'W.

### Anchorages

(191) Vessels anchor outside St. Marys Entrance about 1 mile northward of the approach range in about 42 to 46 feet of water, and sand and shingle bottom. Inside the entrance fair anchorage is along the sides of the channels in Cumberland Sound and in the Amelia River according to draft.

### Currents

(192) The tidal currents at the entrance have considerable velocity and are dangerous at times, especially on the flood which generally sets northwestward and on the ebb which sets southeastward except during northeast winds when there is a strong southerly set off the end of the jetties on both tides. It has been reported that this set sometimes attains a velocity exceeding 5 knots. Maximum current velocities are reported to be 2.0 to 3.9 knots in St. Marys Entrance and 1.0 to 2.5 knots in the Cumberland Sound channel. Large vessels are cautioned not to enter the entrance channel before the pilot boards. Freshets in the St. Marys River may cause the ebb to run 7 or 8 hours. Current predictions for Cumberland Sound vicinity may be obtained from the Tidal Current Tables.

### Weather, Cumberland Sound and vicinity

(193) The climate features short, mild winters and warm, humid summers with fog likely on cool, clear winter mornings. About 50 inches (1270 mm) of rain falls on some 70 days annually. Much of the precipitation occurs in showers or thunderstorms from June through September. Temperatures climb above 90°F (32.2°C) on about 55 days and drop to 32°F (0°C) or below on just 10 days, on the average. By far the biggest threat to this pleasant climate are hurricanes, which are most likely, from June through November. While the area is vulnerable to this threat, direct landfalling hurricanes are rare, and those that pass offshore cause relatively minor damage.

(194) The most dangerous tropical cyclones are those that cross the coast from the east through southeast and those that approach from the south through southwest. During hurricane Dora (September 1964) winds of 85 knots or more extended from St. Augustine to Fernandina Beach. Unusually high tides were generated by prolonged onshore winds. The Amelia River tide gauge recorded readings to 10 feet (3 m) above normal. From experience it can be suggested that, when winds reach 50 knots or more and tides surge to 8 to 10 feet (2 to 3 m) above normal at the Amelia River gauge, there is a likelihood of sudden shoaling in the St. Marys River entrance. A severe threat to shipping should be anticipated when a hurricane is expected to make landfall within 90 miles (167 km) south, or 30 miles (56 km) north, or when a severe tropical storm (50-63 knots) is expected to make landfall within 60 miles (111 km) south, or 20 miles (37 km) north of the St. Marys River entrance. If adequate shelter is not available at Fernandina Beach,

it is suggested that shelter be looked for in the reaches of principal rivers that are protected from the south and east by wooded high bluffs. For example, shelter can be found at Mush Bluff on Crooked River and behind the bluffs 4 miles (7 km) above St. Marys River. For more detailed information see the **Hurricane Haven Handbook for the North Atlantic Ocean** as mentioned in chapter 3.

### North Atlantic Right Whales

(195) Approaches to the St. Marys River entrance lie within designated critical habitat for endangered North Atlantic right whales (see **50 CFR CFR 226.203(c)**, chapter 2). The area is a calving ground from, generally November through April. It is illegal to approach right whales closer than 500 yards. (See **50 CFR 224.103(c)**, chapter 2, for limits, regulations, and exceptions.) **Recommended two-way Whale Avoidance Routes** have been established in Cumberland Sound to reduce the likelihood of ship strikes of endangered North Atlantic right whales. All vessels are encouraged to use recommended routes when traveling into or out of Fernandina Harbor. (See **North Atlantic right whales**, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.)

(196) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in the Southeastern United States Seasonal Management Area between November 15 and April 15. The area is defined as the waters bounded to the north by 31°27'N., to the south by 29°45'N., and to the east by 80°51.6'W. (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.)

### Pilotage, St. Marys, Fernandina Beach, and Kings Bay

(197) Pilotage for St. Marys, Fernandina Beach, and Kings Bay is compulsory for all foreign vessels and U.S. vessels under register in foreign trade and drawing more than 7 feet of water. Pilotage is optional for U.S. vessels in coastwise trade which have on board a pilot licensed by the Federal Government.

(198) The area is served by Cumberland Sound Pilots Association (Fernandina Pilots), on the north end of Amelia Island, at 112 North Sixth Street, Fernandina Beach, FL 32034; telephone 904-261-3158, fax 904-321-1990. The office/station monitors VHF-FM radiotelephone channels 11, 13, and 16, and works channel 11.

(199) The pilot boat PILOT 1 is 35 feet long and has a black hull, white superstructure, and the word PILOT displayed on the side of the pilot house; the standard day and night pilot signals are displayed. The pilot boat monitors VHF-FM channels 11, 13, and 16, and works channel 11. Pilot boarding and cruising area for vessels drawing more than 36 feet is in the vicinity of St. Marys Entrance Lighted Buoy STM (30°42'54"N., 81°14'39"W.). Vessels with a draft of 36 feet or less are boarded about 2 miles east of the approach range front light at about 30°43.0'N., 81°18.1'W. Cumberland Sound Pilots Association provides 24-hour service. Vessels should rig their ladder 1 meter above the water, maximum speed 6 knots.

(200) Pilots are normally obtained by telephone, by VHF-FM radiotelephone through Jacksonville Marine Operator, or by previous arrangements through ship's agents. A 24-hour ETA lead time is requested.

(201) The Cumberland Sound Pilots Association participates in the North Atlantic right whale Early Warning System. (See North Atlantic right whales, indexed as such, chapter 3.)

(202) The St. Johns Bar Pilots, on request, will relay messages by telephone to the pilot at Fernandina Beach. (See Pilotage, Jacksonville, indexed as such, chapter 9, for radiotelephone frequencies used by the St. Johns Bar Pilots.)

### Towage

(203) Tugs are available for docking and undocking. Arrangements for tugs are made through ships' agents or through the local pilot.

### Quarantine, customs, immigration, and agricultural quarantine

(204) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(205) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) A county hospital is at Fernandina Beach.

(206) Fernandina Beach is a **customs port of entry.**

### Harbor regulations

(207) All vessels are docked and undocked under the direction of the harbormaster, who is also the chief pilot. All vessels should proceed through the harbor at slow speed, and not over 5 knots, as there are many craft moored along the waterfront.

### Wharves

(208) The Ocean Highway and Port Authority of Nassau County owns one major commercial pier on Amelia River, the Forest Products Terminal. There are two privately owned facilities for deep-draft vessels at Fernandina Beach. Both have highway and rail connections. Depths alongside are reported depths. (For latest information on depths contact the operator or the pilot or harbormaster.) There are numerous smaller facilities along the waterfront which are used for the receipt of seafood and servicing of commercial fishing vessels and small craft; these facilities are not described. (For a complete description of the wharves and piers at Fernandina Beach, refer to the Port Series, a Corps of Engineers publication.) A deep-draft wharf at Kings Bay is described later in this chapter.

(209) **Container Corporation of America Wharf** (30°40'58"N., 81°27'37"W.): east side of Amelia River about 1.5 miles above the channel entrance; offshore wharf with 365 feet of berthing space with dolphins; 29 feet alongside; deck height, 14 feet; hose-handling equipment; untreated water available; handles fuel oil for plant consumption.

(210) **Forest Products Terminal**: east side of Amelia River about 1.75 miles above the channel entrance; marginal wharf with 1200-foot face; 36 feet reported alongside; deck height, 12 feet; transit sheds with 100,000 square feet of storage; 18 acres of open storage. Two container cranes, one whirley crane, forklifts, potable water; operated by Nassau Terminals.

(211) **Rayonier Wharf**: east side of Amelia River, about 1.3 miles southward of the Container Corporation of America Wharf; in 2005, Rayonier Wharf was reported inactive.

### Supplies

(212) Provisions and some marine supplies are available at Fernandina Beach. The fresh water piped to the wharves is from artesian wells and, having some mineral content, should be treated for use in boilers. Bunker C oil and diesel oil for oceangoing vessels can be obtained by barge or truck from Jacksonville.

### Repairs

(213) There are no drydocking or major repair facilities for oceangoing vessels at Fernandina Beach; the nearest such facilities are at Jacksonville, FL. Machine, welding, and electrical shops off the waterfront can make limited above the waterline repairs. The larger of two marine railways is on the east side of Amelia River, about 0.6 mile northward of Rayonier Wharf; vessels up to 130 feet in length and 12-foot draft can be handled for hull, engine, and electrical repairs.

(214) No special facilities are available for wrecking or salvage operations. Such equipment can be obtained from Jacksonville.

### Communications

(215) Fernandina Beach is served by State Route A1A, Class I railroad (freight service only), and an airport. There are bus connections to Jacksonville where there are passenger rail connections. Ferryboat service is available to Cumberland Island.

### Small-craft facilities

(216) The municipal marina is on the east side of Amelia River, about 2.3 miles southward of the channel entrance and 0.5 mile northward of Rayonier Wharf. Berthage with electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out, and a launching ramp are available.

(217) The Intracoastal Waterway enters Cumberland Sound from the Cumberland River and continues through the Amelia River on the south.

(218) **Beach Creek** extends northward into Cumberland Island from a point just inside the entrance to Cumberland Sound. In 1978, 2 feet was reported at the entrance, and the creek dried about 0.2 mile below Dungeness.

(219) **Kings Bay** is in the northwesterly part of Cumberland Sound, about 5 miles above its southerly entrance. A Naval submarine support base here has a floating drydock and a 2,000-foot concrete pile wharf with depths of 40 feet reported alongside in 1983; deck height is about 14 feet. A rail spur line connects the terminal with the Class I railroad; two transit sheds and two 10-ton mobile hoists are available. The facility is owned by the U.S. Government.

(220) A **safety/security zone** has been established in Kings Bay. (See **165.1 through 165.13 and 165.731**, chapter 2, for limits and regulations.)

(221) A **regulated navigation area** has been established in Cumberland Sound in the vicinity of Kings Bay. (See **165.1 through 165.13 and 165.730**, chapter 2, for limits and regulations.)

(222) **St. Marys River,** the principal tributary of Cumberland Sound, enters from westward, and is a portion of the boundary between Georgia and Florida. It is used primarily by shrimp fishermen and tugs towing fuel oil as far as St. Marys. The controlling depth in the channel to St. Marys is about 14 feet. Above St. Marys a vessel with a draft of 10 feet or less should have little difficulty going as far as Kings Ferry, 32 miles above the mouth, on a rising tide. The river is very crooked, and some of the turns are sharp. **Caution** is advised when entering the river, especially in late afternoon, as the indefinite shoreline of the surrounding marshlands make the unmarked channel in the first reach difficult to negotiate. The tank at St. Marys charted in 30°43.5'N., 81°32.8'W. is a useful landmark for navigating this stretch. Unpredictable currents have been reported in the entrance to the river, at the junctions with Jolly and North Rivers, and along the piers at St. Marys. The mean range of tide is 5.8 feet at the entrance, 6 feet at St. Marys, and 4.8 feet at Crandall, 5 miles above the mouth. The water is fresh above the railroad bridge, 20 miles above the mouth. A pilot for the river is available at Fernandina Beach.

(223) The twin fixed spans of U.S. Route I-95 highway bridge with a clearance of 35 feet crosses St. Marys River about 15.2 miles above the mouth. U.S. Route 17 highway bridge at Wilds Landing, 20 miles above the mouth of the river, has a swing span with a clearance of 5 feet. The railroad bridge just upstream has a swing span with a clearance of 5 feet. (See **117.1 through 117.59, 117.329, and 117.373**, chapter 2, for drawbridge regulations.) Overhead power cables close upstream of the bridge have a least clearance of 55 feet.

(224) The town of **St. Marys** is on the north bank of St. Marys River, 4 miles above the mouth. The larger wharves here are used by fishing boats and have depths

of about 13 feet alongside. Diesel fuel, electricity, water, ice, and a pump-out station are available. However, it is reported that strong currents, the large tidal range, and the exposure to winds from all but north make mooring at these wharves hazardous for strangers.

(225) A good haven for small vessels, particularly in northeasterly weather, can be found at St. Marys. Small craft also can obtain refuge in bad weather by anchoring near the pulp mill 1 mile up North River or near the bridges 16 miles above St. Marys on the St. Marys River.

(226) **North River** branches from St. Marys River about 2 miles above its mouth. In 1983, it was reported that a draft of 7 feet could be carried to the pulpmill dock up the river.

(227) **Bells River** branches from St. Marys River about 1.5 miles above the town of St. Marys. It flows in an easterly direction to its junction with the Amelia River at Fernandina Beach. In 1983, the reported controlling depth was about 4 feet. **Chester**, a town on the river, has a number of small docks which were reported in ruins in 1983.

(228) **Jolly River** branches eastward from Bells River about 6 miles above its mouth, and empties into Cumberland Sound at the mouth of St. Marys River. In 1983, the reported controlling depth was about 7 feet.

(229) **Lanceford Creek** branches from Amelia River west of Fernandina Beach. The southern entrance where it joins Amelia River dries clear across. In 1983, it was reported that with local knowledge a depth of about 7 feet could be carried from the creek's eastern entrance, junction with Bells River, to the docks at **Black Rock**. The creek widens off the docks into tidal flats which bare at low water. Small boats cross from the creek to Amelia River at high tide through **Soap Creek**, which passes through numerous mud flats and oyster beds that bare at low tide.

## Chart 11488

(230) From St. Marys Entrance to St. Johns River the coast is formed by the shores of Amelia, Talbot, Little Talbot, and Fort George Islands. **Amelia Island** is nearly north and south, with a length of about 12 miles and a width varying from 1 to 2.5 miles. The island is low and gently undulating with heavy woods along the shore.

(231) From seaward no prominent natural features distinguish Amelia Island from other land in the vicinity. It shows a long line of dark woods, irregular in outline, with numerous tall trees rising conspicuously above the general level. In front of these woods a range of sand dunes, partly covered with coarse grass and scrub, backs the broad stretch of white sand beach. Several landmarks are prominent along this stretch of the coast; these were mentioned with the discussion of Fernandina Beach earlier in this chapter. About 3 miles south-southeast of Amelia Island Light is a pier extending 800 feet into the ocean.

(232) The western portion of Amelia Island is marshy. Separating the island from the mainland is a broad stretch of marsh through which flow the Amelia and South Amelia Rivers connecting Cumberland Sound and Nassau Sound.

(233) **Nassau Sound** is 10 miles southward of Amelia Island Light and 6 miles northward of St. Johns River. The entrance is obstructed by shifting shoals which extend about 1.5 miles seaward and form a shallow bar. Breakers form across the entire entrance. Small craft are advised not to attempt passage through the shoals without local information. The mean range of tide in Nassau Sound is 5.4 feet. Route A1A highway bridge and a fishing pier bridge, 1 mile above the entrance respectively, have fixed spans with a least clearance of 15 feet. In 1972, local boaters reported shoaling to depths of about 2 feet in the northeasterly opening of the swing bridge creating hazardous conditions for small craft. It was further reported that small craft can make passage in deeper water through the bridge bents northeastward of the northeasterly opening. Vertical clearance of the bridge through the bents is about 9 feet. A small-craft launching ramp is on the south side of the bridge.

(234) South Amelia River and Nassau River are the principal tributaries of Nassau Sound. **South Amelia River** enters from the northward and is a portion of the Intracoastal Waterway.

(235) **Nassau River** enters Nassau Sound from the northwestward. Occasional sunken logs and numerous shoals are a menace to navigation. In 1993, a partially submerged wreck was reported in the middle of the river, about 0.7 mile from the confluence with South Amelia River in about 30°31'48"N., 81°28'18"W. **Nassauville** is a small settlement on the north bank of the river, 7 miles above the entrance to the sound, with private piers adjoining private homes and a fishing camp. Local knowledge is necessary to carry the best water to Nassauville and **Christopher Creek**, where there is a private marine railway which can haul out craft up to 50 feet in an emergency.

(236) **Alligator Creek** connects South Amelia River and Nassau River. Its twisting channel leads through tidal flats and between oyster bars.

(237) **Sawpit Creek** enters the sound from the westward. Route A1A highway bridge, crossing the creek about 0.3 mile above the mouth, has a 38-foot fixed span with a clearance of 15 feet. A portion of this creek forms a part of the Intracoastal Waterway.

(238) **Talbot Island,** about 5 miles in length and 1.5 miles in width, is partly wooded and partly marshy. Along the marshy eastern shore flow several creeks which separate Talbot and Little Talbot Islands. Talbot Island, Little Talbot Island, and Fort George Island form a State park and recreation area and are connected to Amelia Island and the mainland by a paved highway and bridges. The road also leads to Jacksonville along the north bank of the St. Johns River with a ferry connection at Fort George Island to the south bank of Mayport.

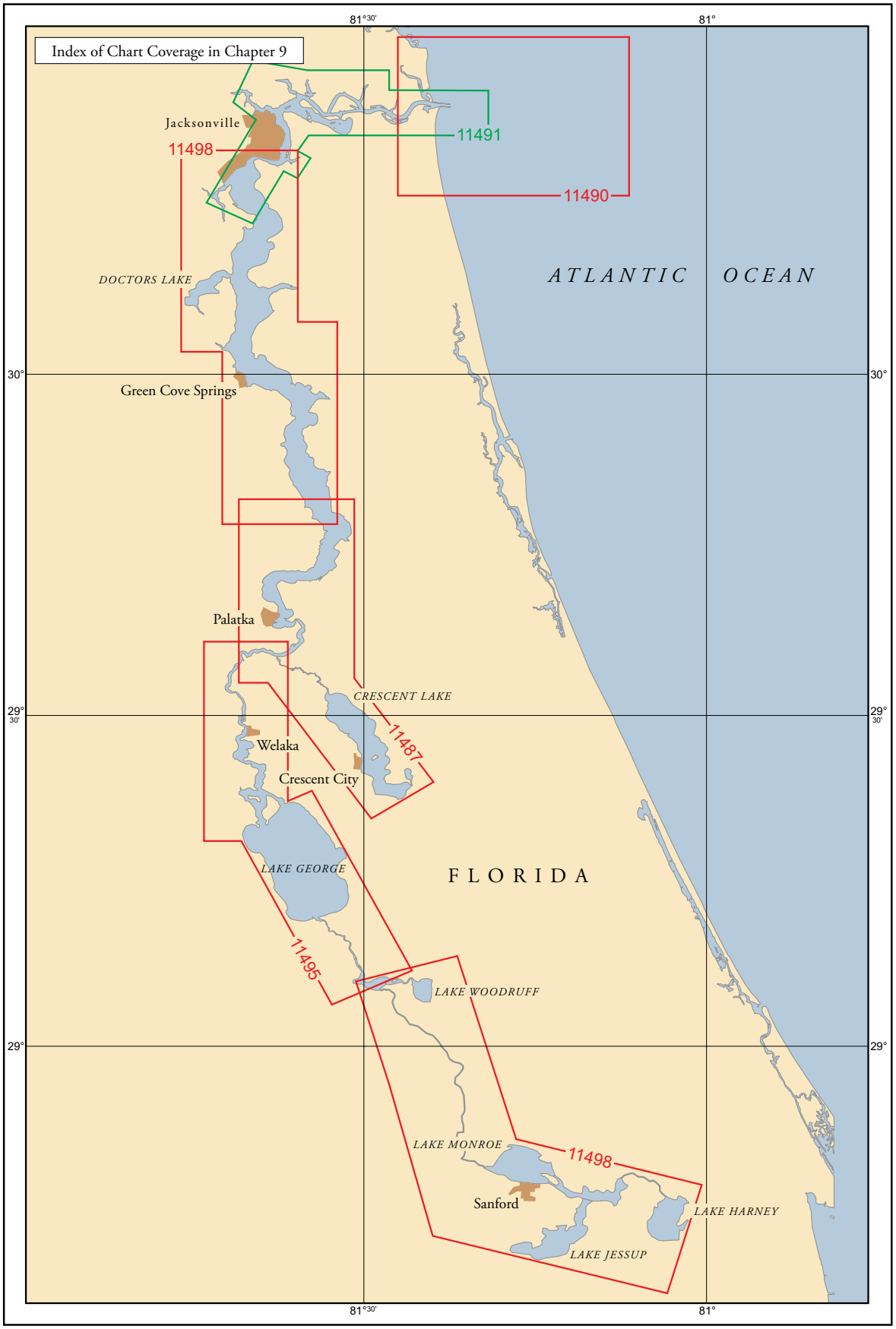
(239) **Little Talbot Island,** a strip of low flat land about 4 miles long and averaging about 0.8 mile wide, lies in a north-south direction. The island is wooded along its outer coast. From seaward it shows a strip of dark woods with many conspicuous sand dunes near the beach. Its south end runs off in a low point of bare sand bordering on Fort George Inlet.

(240) **Fort George Inlet** is a narrow body of water separating Little Talbot and Fort George Islands. The inlet changes rapidly due to shifting sands at its entrance, and should never be used without local knowledge. The Heckscher Drive (State Routes 105-A1A) highway bridge near the entrance to the inlet has a 38-foot fixed span with a clearance of 15 feet at the center. An overhead power cable at the bridge has a clearance of 40 feet. A fish camp is on the west bank immediately above the bridge. Limited supplies, water, ice, and a launching ramp are available.

(241) **Fort George Island** is westward and southward of Fort George Inlet. Its eastern shore, forming the coastline, shows a broad strip of white sand beach backed by a range of high hills. The island is separated from the mainland by Sisters Creek. Fort George Island, formerly called Pilot Town, is a town on the St. Johns River near the south end of the island opposite Mayport.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11510 | Sapelo Island, Doboy Sound | 31°23'N/81°17'W | 7.4 | 7.0 | 0.2 |
| 11512 | Savannah River Entrance, Ft. Pulaski | 32°02'N/80°54'W | 7.5 | 7.1 | 0.2 |
| 11511 | Egg Islands, Ossabaw Sound | 31°50'N/81°05'W | 7.8 | 7.4 | 0.2 |
| 11511 | Walburg Creek Entrance, St. Catherine Sound | 31°41'N/81°09'W | 7.6 | 7.3 | 0.2 |
| 11510 | Blackbeard Island, Sapelo Sound | 31°32'N/81°12'W | 7.5 | 7.1 | 0.2 |
| 11506 | St. Simons Island Lighthouse, St. Simons Sound | 31°08'N/81°24'W | 7.2 | 6.8 | 0.2 |
| 11506 | Brunswick (Howe Street Pier), East River | 31°09'N/81°30'W | 7.8 | 7.5 | 0.2 |
| 11503 | St. Marys Ent., north Jetty, Cumberland Sound | 30°43'N/81°26'W | 6.3 | 6.0 | 0.2 |
| 11503 | Fernandina Beach, Amelia River | 30°41'N/81°28'W | 6.6 | 6.2 | 0.2 |
| 11488 | Nassauville, Nassau River | 30°34'N/81°31'W | 5.2 | 4.9 | 0.2 |
| 11488 | Jacksonville, Long Branch, St. Johns River | 30°22'N/81°37'W | 2.7 | 2.6 | 0.1 |
| 11488 | Jacksonville Beach, ocean | 30°17'N/81°23'W | 5.6 | 5.2 | 0.2 |
| 11488 | Oak Landing, ICWW | 30°15'N/81°26'W | 4.4 | 4.2 | 0.2 |
| 11488 | St. Augustine, City Dock, Matanzas River | 29°54'N/81°19'W | 5.0 | 4.7 | 0.2 |
| 11512 | Tybee Light | 32°02'N/80°51'W | 7.4 | 7.0 | 0.2 |
| 11512 | Beach Hammock, Wassaw Sound | 31°57'N/80°56'W | 7.5 | 7.1 | 0.2 |
| 11512 | Romerly Marsh Creek, Wassaw Sound | 31°56'N/81°00'W | 7.7 | 7.3 | 0.2 |
| 11512 | Isle of Hope, Skidaway River | 31°59'N/81°03'W | 8.4 | 8.0 | 0.2 |
| 11512 | Savannah (Bull Street), Savannah River | 32°05'N/81°06'W | 8.6 | 7.1 | 0.2 |
| 11511 | Kilkenny Club, Kilkenny Creek | 31°47'N/81°12'W | 8.1 | 7.7 | 0.2 |
| 11511 | Bear River Entrance, St. Catherine Sound | 31°43'N/81°09'W | 7.7 | 7.3 | 0.2 |
| 11511 | North Newport River (Daymarker #119) | 31°41'N/81°12'W | 7.8 | 7.4 | 0.2 |
| 11511 | South Newport Cut (North Newport River) | 31°40'N/81°16'W | 8.1 | 7.7 | 0.2 |
| 11511 | Thomas Landing, S. Newport River, Newport River | 31°39'N/81°15'W | 7.9 | 7.6 | 0.2 |
| 11511 | Gould Landing, Barbour Island River | 31°37'N/81°16'W | 8.1 | 7.7 | 0.2 |
| 11510 | Pine Harbor, Sapelo River | 31°33'N/81°22'W | 7.8 | 7.4 | 0.2 |
| 11510 | Dog Hammock, Sapelo River | 31°32'N/81°16'W | 7.8 | 7.4 | 0.2 |
| 11510 | Hudson Creek entrance, Doboy Sound | 31°27'N/81°21'W | 7.8 | 7.4 | 0.2 |
| 11510 | Darien, Darien River | 31°22'N/81°26'W | 7.9 | 7.5 | 0.2 |
| 11508 | Wolf Island, south end, Altamaha Sound | 31°19'N/81°19'W | 7.2 | 6.9 | 0.2 |
| 11508 | Hampton River entrance | 31°13'N/81°19'W | 7.2 | 6.8 | 0.2 |
| 11506 | St. Simons Sound Bar, St. Simons Sound | 31°06'N/81°19'W | 7.1 | 6.7 | 0.2 |
| 11506 | Hwy Bridge, South Brunswick River, St. Simons | 31°09'N/81°34'W | 8.2 | 7.8 | 0.2 |
| 11504 | Burnt Fort, Satilla River | 30°57'N/81°54'W | 3.5 | 3.3 | 0.1 |
| 11504 | Dover Bluff, Dover Creek | 31°01'N/81°32'W | 7.6 | 7.2 | 0.2 |
| 11504 | Ceylon, Satilla River | 30°58'N/81°39'W | 7.2 | 6.8 | 0.2 |
| 11504 | Cumberland Wharf, Cumberland River | 30°56'N/81°27'W | 7.4 | 7.0 | 0.2 |
| 11504 | Crooked River, Cumberland Dividings | 30°51'N/81°29'W | 7.4 | 7.0 | 0.2 |
| 11503 | Kings Bay, Navy Base, Cumberland Sound | 30°48'N/81°31'W | 7.0 | 6.6 | 0.2 |
| 11503 | Seacamp Dock, Cumberland I., Cumberland Sd. | 30°46'N/81°28'W | 6.8 | 6.4 | 0.2 |
| 11503 | St. Marys, St. Marys River | 30°43'N/81°33'W | 6.4 | 6.1 | 0.2 |
| 11503 | Chester, Bells River, Cumberland Sound | 30°41'N/81°32'W | 6.8 | 6.5 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011


Index of Chart Coverage in Chapter 9
81°30'
81°
30°
29° 30'
29°
Jacksonville
11498
11491
11490
ATLANTIC OCEAN
DOCTORS LAKE
Green Cove Springs
Palatka
CRESCENT LAKE
11487
Welaka
Crescent City
LAKE GEORGE
FLORIDA
11495
LAKE WOODRUFF
LAKE MONROE
11498
Sanford
LAKE HARNEY
LAKE JESSUP

# St. Johns River

## Charts 11490, 11491, 11492, 11487, 11495, 11498

(1) **St. Johns River**, the largest in eastern Florida, is about 248 miles long and is an unusual major river in that it flows from south to north over most of its length. It rises in the St. Johns Marshes near the Atlantic coast below latitude 28°00'N., flows in a northerly direction, and empties into the sea north of St. Johns River Light in latitude 30°24'N. The river is the approach to the city of Jacksonville and a number of towns near its shores. Some of these places are winter resorts while others are centers of farming districts and citrus groves. Deep-draft vessels go as far as just below the Main Street Bridge. Southward of the Jacksonville bridges, commercial traffic is light and consists almost entirely of oil barges. Many pleasure craft navigate this part of the river, usually going only as far as Sanford, though small boats have navigated the river as far as Lake Washington, 188 miles south of Jacksonville.

### Intracoastal Waterway

(2) The Intracoastal Waterway crosses the St. Johns River at nearly right angles about 5 miles above the mouth, at about 30°23.1'N., 81°27.8'W.

(3) **Jacksonville** has expanded by consolidation to include most of Duval County and is now the largest city in the United States in terms of area; its extent along the St. Johns River is from the ocean to the town of Orange Park on the west side of the river and to Julington Creek on the east side. Most of the marine terminals are on the west side of the river about 21 miles above the entrance, just above the point where the river first turns southward. The deepwater port is the largest on the east coast of Florida. It is a major southeastern bulk-handling, distribution, and railroad center. Both general and bulk cargoes are handled, and Jacksonville is a leading southeastern container port. The principal exports are paper products, phosphate rock, fertilizers, chemicals, citrus products, naval stores, tallow, clay, scrap metal, feed, and general cargo. The principal imports are petroleum products, coffee, iron and steel products, limestone, pulpwood, cement, automobiles, lumber, chemicals, alcoholic beverages, and general cargo.

### Caution

(4) Navigators should bear in mind the prevailing northerly current in this area, which is felt until well inside the 10–fathom curve, except with northeasterly or northerly winds.

### North Atlantic Right Whales

(5) Approaches to the St. Johns River entrance lie within designated critical habitat for endangered North Atlantic right whales (see **50 CFR 226.203(c)**, chapter 2.) The area is a calving ground from generally November 15 through April 15. It is illegal to approach right whales closer than 500 yards. (See **50 CFR 224.103(c)**, chapter 2, for limits, regulations, and exceptions.) **Recommended two-way Whale Avoidance Routes** have been established in the approach to the St. Johns River entrance to reduce the likelihood of ship strikes of endangered North Atlantic right whales. All vessels are encouraged to use recommended routes when traveling into or out of the port of Jacksonville. (See **North Atlantic right whales**, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions.)

(6) All vessels 65 feet or greater in length overall (L.O.A.) and subject to the jurisdiction of the United States are restricted to speeds of 10 knots or less in the Southeastern United States Seasonal Management Area between November 15 and April 15. The area is defined as the waters bounded to the north by 31°27'N., to the south by 29°45'N., and to the east by 80°51.6'W. (See **50 CFR 224.105** in chapter 2 for regulations, limitations, and exceptions.)

### Fish Havens

(7) Numerous fish havens are eastward of the entrance to St. Johns River; the outermost, marked by a private unlighted buoy, is about 27 miles eastward of St. Johns Light.

### Prominent features

(8) **St. Johns Light** (30°23'10"N., 81°23'53"W.), 83 feet above the water, is shown from a white square tower on the beach about 1 mile south of St. Johns River north jetty. A tower at Jacksonville Beach and a red and white checkered water tank at Mayport Naval Station are prominent off the entrance, and water tanks are prominent along the beaches to the southward.

### COLREGS Demarcation Lines

(9) The lines established for St. Johns River are described in **80.723**, chapter 2.

**St. Johns River Navigational Guidelines**

(10) Completion of channel deepening projects in 1978 in the St. Johns River has resulted in a deeper steep-sided channel cut through rock in some areas. There has been no appreciable increase in channel width. This channel configuration combined with the increased size and draft of vessels entering the port has resulted in increased navigational problems. After consultation with the Jacksonville Waterways Management Council, the Coast Guard Captain of the Port has developed certain guidelines to enhance safe navigation.

(11) It is recommended that all vessels, particularly those which must navigate in the channel because of draft restraints, strictly adhere to them. Nothing in these guidelines shall supersede or alter any applicable laws or regulations. In construing and complying with these guidelines, regard shall be had to all dangers to navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from the guidelines necessary to avoid immediate danger.

(12) Local knowledge of the river and of local practices is deemed essential for the safe movement of vessels. Experience and knowledge at least comparable to that required for a Federal Pilot's License is recommended for the person in charge of the movement of vessels which do not take pilots.

**Vessels Movements**

**General Provisions**

(13) All time limits are subject to change due to weather conditions, low-powered vessels, emergencies or ship handling characteristics. All times refer to the flood/ebb currents as published for St. Johns River Entrance, FL.

(14) For purposes of these guidelines, **low-powered vessels** are those which are unable to maintain a speed of at least 8 knots through the water. **Poor handling vessels** are those which because of their configuration or steering characteristics, are unable to consistently navigate within the channel half-width.

**Inbound vessels**

**(Sea Buoy to Main Street Bridge):**

(15) Vessels with a draft over 33 feet but no more than 36 feet (fresh water) shall start in no sooner than 15 minutes before start of a flood current on the bar. Vessels with a draft greater than 36 feet (fresh water) shall start in no sooner than 30 minutes after start of flood current on the bar. Stop taking in vessels with draft over 33 feet (fresh water) one hour before start of ebb current.

**Outbound vessels**

**(Main Street Bridge to N.B. Broward Bridge):**

(16) Vessels which are over 34 feet of draft (at their berth) sailing between Main Street Bridge and the N.B. Broward Bridge shall sail no sooner than 1½ (one and one half) hours after flood current. Vessels over 32 feet of draft sailing during times of ebb current in Chaseville Turn will take tug escort if required by the pilot. Cut off time is the beginning of ebb current. Vessel leaving Blount Island with a draft of over 36 feet (at their berth), sailing time shall be no sooner than the start of flood current. Cut off time is the beginning of ebb current.

**Docking and Undocking**

(17) Due to the unique characteristics at the following facilities, it is necessary to establish specific times for docking and undocking of vessels as follows:

**Inbound vessels sailing to:**

(18) All shipyard berths
(19) Gate Maritime Terminal
(20) Celotex Corporation Berth
(21) Jacksonville Electric Authority, Northside Berth
(22) U.S. Gypsum Company Berth

**Outbound vessels sailing from:**

(23) PCS Phosphates, Inc. Berth with drafts over 32 feet.
(24) Celotex Corporation, Inc.
(25) U.S. Gypsum Company Berth

(26) These times are generally set by the docking masters. Other berths may require specific times for docking or undocking and will be considered on a case by case basis.

**Tows**

(27) All low-powered tows or vessels (speed less than 8 knots through water) will start no sooner than 1 (one) hour before flood current, and stop 2 (two) hours before ebb current. Vessels towed on a hawser have been found to demonstrate poor handling characteristics. When due to draft side they are required to navigate in the main channel, particular care should be exercised to ensure that they can, when necessary, navigate in their channel half-width and stop if required. It is recommended that they proceed at a moderate speed and avoid making a passage of the river with a strong fair tide. Under normal weather conditions, vessels up to 400 feet in length can generally be towed satisfactorily with these tide and speed conditions. It is required that barges in excess of 400 feet in length towed on a hawser take assist tug(s). It is recommended that towed vessels operating under adverse conditions, including strong fair tides, employ sufficient assist tugs or other equivalent measure to ensure the required degree of control. Deep-draft inbound tows are considered by knowledgeable local mariners to handle best when brought in at

the beginning of the flood current. All tows should operate with tow lines shortened up as close as possible. Tandem tows, except for small scows and nondescript vessels which can operate outside the main channel, are considered unmanageable and should not be attempted.

(28) **Inbound Tows, in the notch or on the Hawser:**

(29) Tug 8,000 hp or greater-Barge 33 feet draft or less (fresh water) = anytime.

(30) Tug 7,000 hp or greater-Barge 32 feet draft or less (fresh water) = anytime.

(31) Tug 6,000 hp or greater-Barge 31 feet draft or less (fresh water) = anytime.

(32) Tug 5,000 hp or greater-Barge 30 feet draft or less (fresh water) = anytime.

(33) Tug 4,000 hp or greater-Barge 26 feet draft or less (fresh water) = anytime.

(34) Inbound tows with fresh water drafts or horsepower ratings outside these parameters shall start in no sooner than flood current and stop one hour before ebb.

(35) Additional assist tug/tugs may be required due to local conditions.

(36) **Tows Transiting Downtown Bridges.**

(37) Barges over 250' on a hawser should have at least one assist boat of sufficient horsepower to safely pass through the bridge draws.

(38) Barges over 300 feet towed on a hawser must confer with the Captain of The Port office prior to transiting the downtown bridges.

(39) Dredge pipe tows over 600 feet must advise Captain of The Port prior to transiting the downtown bridges.

(40) Slack water or a slightly opposing current has been found to be beneficial for safe handling of hawser tows while transiting the downtown bridges.

(41) **Vessels proceeding into and out of Pablo Creek.** Passage through the entrance to Pablo Creek is difficult at some stages of the current cycle. Unless it is certain that the vessel in question can be safely operated through the entrance without regard to the state of the current then the vessel's passage through this area should be made at slack water. Deeper draft vessels should transit this area at high water slack.

### Dead Ship Movements

(42) Dead ship condition is the condition in which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power.

(43) Owners, agents, or other parties responsible for vessels requesting to enter, depart, or transit dead ship within the Jacksonville, FL Marine Safety Zone, as described in **33 CFR 3.35-20** (not carried in the Coast Pilot) must comply with the following requirements.

(44) a. The request must be in writing and be received a minimum of twenty four hours in advance of the expected movement. This request should include the towing arrangement and horsepower of the tug. Dead ship tows of vessels less than 250 feet in length will not be required to notify the U.S. Coast Guard unless there is some exceptional circumstance which would make notification necessary. Vessels 250 feet in length or greater will typically be issued a Captain of the Port Order to address the dead ship movement.

(45) b. The wind speed at the bar should be less than 15 knots.

(46) c. Transits should be during daylight hours only with a minimum of three (3) miles visibility.

(47) d. Six linehandlers must be provided for movements.

(48) e. A pilot shall be on the lead tug and on the deadship for all vessel over 300 feet in length.

(49) f. The number of tugs required in addition to the lead tug is as follows:

(50) 1. Less than 150 feet in length - One assist tug.

(51) 2. 150 feet up to 350 feet - Two assist tugs.

(52) 3. 351 feet up to 550 feet - Three assist tugs.

(53) 4. Greater than 550 feet - Four assist tugs.

(54) 5. Special conditions or handling characteristics may require more or less tugs.

(55) g. The St. Johns River Bar Pilots Association must be consulted regarding any additional requirements the pilots may have.

### Communications and areas of concern

(56) The entrance channel between the jetties is marked by St. Johns Bar Cut Range. Currents which often set across the ends of the jetties are discussed under Tides and Currents in this chapter. Vessels arriving at the bar should give a Security call on VHF-FM channel 13, 30 minutes before entering the jetties. So as not to delay river traffic, low-powered or poor handling vessels intending to enter the river should be prepared to delay up to 45 minutes, if necessary, to allow other vessels to clear outbound or to allow full-powered and more maneuverable vessels to precede them through the jetties. Entry into the St. Johns River through the jetties must be with careful regard to wake and speed in consideration of persons fishing off the jetties and adjacent shoreline.

(57) **Seagoing tows** sometimes makeup inside the jetties. Tows intending to makeup in this area should give a Security call on VHF-FM channel 13 at least 45 minutes prior to commencing operations and give consideration to the vessels which must transit the area.

(58) **Vessels intending to get underway from a berth** should give a Security call on VHF-FM channel 13 advising of their intentions at least 30 minutes prior to letting go. Low-powered and/or poor handling vessels should be prepared to delay up to 30 minutes to allow full-powered and more maneuverable vessels to precede them as this will avoid undue delay for overall river traffic.

### Areas of particular concern

(59) Four areas in the St. Johns River are considered to be particularly troublesome. These areas are listed in order of ascension when proceeding from sea. Vessels

should make every effort to avoid meeting at these areas, and should give Security calls on VHF-FM channel 13 (165.65 MHz) 15 minutes prior to arriving at any one of these areas. The vessel with the fair current should initiate a proposal for meeting or passing and the vessel stemming the current should hold as necessary. Any departure from this procedure should be agreed to by both vessels in a timely manner.

(60) (1) **Intracoastal Waterway** (30°23.1'N., 81°27.8'W.). This waterway is used extensively by tows, and its junction with the St. Johns River is subject to strong and unpredictable crosscurrents at various stages of the tide. The situation is further complicated by repair docks on the north side which may require speed reductions to reduce wake. Tows intending to enter the main river channel from the Intracoastal Waterway should give a Security call on VHF-FM channel 13, 30 minutes prior to entry and adjust speed so as to enter the river when the channel is clear. Every effort, including holding, should be made to avoid unduly restricting full-powered vessels, and allow them to clear this area when either inbound or outbound.

(61) (2) **Dames Point Turn** (30°23.1'N., 81°33.6'W.). Navigation of this sharp turn is complicated by crosscurrents coming from the old channel behind Blount Island which tend to set a vessel deep into the bend on both the flood and ebb. In addition, the channel in this area is used as a turning basin for vessels using Blount Island terminal and the waterfront facilities in the old channel to the west of Blount Island.

(62) (3) **Trout River Cut** (30°23.3'N., 81°37.6'W.). This dredged channel extends through rock formations, and deep loaded vessels must exercise great care not to leave the channel in this area. Local knowledge is necessary to predict current effects as they tend to set across the channel on both the flood and ebb. Poor handling vessels should use an assist tug when transiting the area of Trout River Cut and Chaseville Turn to avoid being set on vessels transferring at the many oil terminals on the west bank of the river.

(63) (4) **Commodore Point** (30°19.1'N., 81°37.7'W.). The nearly 90-degree turn at Commodore Point is complicated by the Hart Bridge, with its piers located in the turn, as well as the Matthews Bridge just to the north. Poor handling vessels, or those whose engines are questionable for any reason, should use assist tugs to avoid being set on the support piers of either bridge.

(64) Smaller vessels continuing up the river are advised that about 2 miles above Commodore Point, at a bend in the river at **Hendricks Point** (30°19.1'N., 81°39.8'W.), a series of four bridges is within a 0.7 mile reach. Mariners should ensure that they can clear the closed bridges or that they can navigate safely between the bridges when opening. There is limited stopping and turning room once committed to the transit of the area which is subject to strong currents in the constricted bend.

### Channels

(65) A Federal project provides for a channel 42 feet deep from the ocean to St. Johns Point, thence 38 feet deep to a point 2.1 miles north of Mathews highway bridge, thence 30 to 38 feet deep to Commodore Point via Terminal Channel. The main channel is maintained at or near project depths. (See Notice to Mariners and latest edition of chart for controlling depths.)

(66) A lighted buoy with a racon is about 3 miles off the entrance to the river. The entrance channel, between two converging rubblestone jetties, and the channel in the river are marked by lighted and unlighted buoys, lights, and lighted ranges.

### Anchorages

(67) Vessels waiting outside the entrance to St. Johns River can anchor in depths of 36 to 50 feet north-northeastward of the jetties if wind and sea permit. (See **110.182**, chapter 2, for limits and regulations of the anchorage areas.) Anchorage south of the south jetty is not recommended because of the heavy shrimpboat activity in that area.

(68) **General and quarantine anchorages** are in the St. Johns River in the vicinity of Jacksonville. (See **110.183**, chapter 2, for limits and regulations.) Special small-craft anchorages are 4.5 miles south of Jacksonville. (See **110.1 and 110.73**, chapter 2, for limits and regulations.)

(69) Merchant ships are normally anchored either in the area off Talleyrand Docks and Terminals, locally termed the lower anchorage, or in the area off Commodore Point, known as the upper anchorage. Though these are the only practical anchorages available, the holding ground is only fair and both anchorages are somewhat constricted.

### Bridges

(70) Seven bridges cross the St. Johns River at downtown Jacksonville. A fixed highway bridge with a clearance of 169 feet (174 feet for 200 feet each side of the bridge centerline) crosses the river just above Blount Island at Dames Point. The fixed Matthews highway bridge, 0.5 mile north of Commodore Point, has a clearance of 152 feet across the main (Terminal) channel and 86 feet at the center of the span across Arlington Channel. At Commodore Point, the Hart suspension bridge has a clearance of 135 feet, with 141 feet at the center. Main Street (Alsop) highway bridge, the first of four bridges at Hendricks Point, has a vertical-lift span with clearances of 40 feet down and 135 feet up; the second, Acosta highway bridge, 0.3 mile upstream from the Main Street bridge, has a fixed span with a clearance of 75 feet; the third, the railroad bridge adjacent to the Acosta bridge, has a bascule span with a clearance of 5 feet; the fourth, the Fuller Warren highway bridge, has a fixed span with a clearance of 75 feet at the center. (See **117.1 through 117.59 and 117.325,** chapter 2, for drawbridge regulations.) The bridgetenders at Hendricks Point monitor

VHF-FM channel 16 and work on channel 17; call sign, Main Street (Alsop) WHV-528. The bridgetender of the FEC bridge monitors VHF-FM channel 16 and works on channel 13; call sign, KXR-936.

(71) Overhead power cables with a clearance of 175 feet cross the river about 9 miles above the entrance at Blount Island.

### Routes

(72) Along the coast from Charleston to Jacksonville, the course between the outer lighted whistle buoys is from 10 to 15 miles offshore. Vessels making for St. Johns River entrance should guard against an inshore set which may amount to a knot or more due to the currents into the inlets. In thick weather, vessels approaching from the northeastward should be mindful of the fact that deep holes may be encountered which may lead them to believe that they are farther offshore than they actually are. Approaching from the southward, vessels clear Hetzel Shoal before shaping a course for St. Johns River entrance. A set of 0.5 to 0.8 knot in a northerly direction parallel with the coast may be expected in this area due to the prevailing current, except with northerly or northeasterly winds. Southbound light-draft vessels can avoid the northerly set due to the prevailing current by following the coast at a distance of from 3 to 5 miles to abeam Ponce de Leon Inlet Light, and then shaping the course to pass outside of Hetzel Shoal Lighted Buoy 8.

### Currents

(73) The tidal currents are strong in St. Johns River as far as Jacksonville. The currents at the entrance between the jetties require special attention. The Bar Pilots report that 1 hour after the beginning of a blow from any direction from north through east to south, a very strong current sets with the wind across the end of the jetties, and the condition is usually dangerous; when such winds reach gale force, the positions of the buoys should not be relied upon as they may drag from station.

(74) The velocity of the current between the jetties is 1.9 knots on the flood and 2.3 knots on the ebb; at Mayport, 2.2 knots on the flood and 3.1 knots on the ebb; at Mile Point, 2.7 miles above the mouth, about 2.8 knots. At downtown Jacksonville (Commodore Point), the velocity of current is about 1.0 knot; however, in 1967 a naval vessel reported being forced against the Acosta highway bridge by flood currents estimated to exceed 5 knots. Caution should be exercised in this area. The flood is increased by northeasterly and easterly winds and the ebb by southwesterly and westerly winds. (See the Tidal Current Tables for daily predictions of the tidal current in St. Johns River entrance and for a number of places on St. Johns River.)

(75) The tidal currents above Jacksonville average less than a knot. The winds have considerable effect on the water level and velocity of the currents. Strong northerly and northeasterly winds raise the water level about 2 feet at Jacksonville, about 1 foot at Palatka, and about 1.5 feet at the mouth of Dunns Creek. Strong southerly and southwesterly winds lower the water level about 1 to 1.5 feet, increase the ebb, and decrease or may interrupt the flood. The currents in Deep Creek are weak, being due primarily to the winds and tide. There is a moderate drainage current in the Oklawaha River. The wind has no appreciable effect on the water level at the head of Dunns Creek and in Lake Crescent.

(76) The river water may be fresh at Jacksonville at low water with westerly winds, while with northeasterly winds the water may be brackish to Palatka.

### Freshets

(77) The flood stages in the river usually occur during the fall and are about 1 foot above ordinary low-water level at Jacksonville, 2 feet at Palatka, 3 feet at Lake George, 5 feet at Sanford, and 6.5 feet at Lake Harney.

### Weather, Jacksonville and vicinity

(78) Jacksonville is near the northern boundary of the trade winds in summer. Winds off the water produce a maritime influence that tempers the heat of summer and cold of winter. Winter storms and severe cold waves often remain north of the area. Occasionally a "nor-easter" will skirt the Florida coast bringing 15- to 30-knots winds, low stratus clouds and drizzle. These are most likely in late summer and fall. This area lies within the hurricane belt although hurricane force winds are rare, since most storms either remain offshore or have tracked inland and weakened.

(79) The average high temperature in Jacksonville is 79°F (26.1°C) and the average low is 59°F (15°C). By a fraction of a degree, July is the warmest month with an average high of 92°F (33.3°C) and an average low of 73°F (22.8°C). January is the coolest month with an average high of 65°F (18.3°C) and an average low of 43°F (6.1°C). Each month, May through August has recorded temperatures in excess of 100°F (37.8°C) and the all-time maximum temperature is 103°F (39.4°C) recorded in June 1950, June 1954, and again in July 1981. Below freezing temperatures have been recorded from November through March and the record minimum is 7°F (-13.9°C) recorded in January 1985. On average, 83 days each year has a maximum temperature of 90°F (32.2°C) or greater while only 15 days can be expected to have minimums of 32°F (0°C) or below.

(80) Over one-third of the annual average rainfall of 53 inches (1346.2 mm) falls during the summer months of June, July, and August. September is the wettest month averaging 7.67 inches (194.8 mm) and November is the driest month averaging about 2 inches (50.8 mm). Most of the summer rainfall is compliments of convective activity or precipitation of a tropical origin. Snowfall is almost unheard of however small amounts have fallen in each month, December through March. The greatest

24-hour snowfall was 1.5 inches (38.1 mm) falling in February 1958.

(81) On the average the Jacksonville area is threatened (tropical cyclone) within 50 nm (93 km) once or twice each year. While this may occur in any month it is most likely from June through October, with a peak in September and October. Most storms have crossed over some portion of the Florida peninsula and weakened. The Port of Jacksonville and Mayport Basin are not considered hurricane havens since surrounding low topography does not provide an adequate windbreak. The Port of Jacksonville, which is less susceptible to storm surges than Mayport, can be used as a haven from tropical storms if there is certainty that winds will not intensify to above 60 knots. While the entrance to the St. Johns River is exposed, farther upstream, between Blount Island and downtown Jacksonville, some sheltering from south and southeast winds is provided by higher elevations, including some river bluffs. Special care should be taken with storms approaching from the southeast. Since 1842, 69 tropical cyclones have come within 50 miles (93 km) of Jacksonville, 21 of those storms have done so since 1950. Hurricane Dora, for example, was one of the worst storms to affect this area. In the early morning hours of September 10, 1964, Hurricane Dora made landfall north of St. Augustine. At Mayport, winds reached 65 knots with gusts to 80 knots while the airport recorded 71-knot sustained winds. Dora provided the first sustained hurricane wind speeds in the 80-year period of record for the Weather Bureau Air Station at Jacksonville. Unusually high tides were produced by onshore winds that exceeded 50 knots for some 12 hours. Water levels reached 5 to 7 feet (1.5 to 2.1 m) above mean sea level on the coast and along the St. Johns River.

(82) Storm tides are more frequent than destructive winds and, along the coast, are the major threat to shipping and residents. Storm surges vary significantly over short distances. Maximum heights occur along the beaches and the entrance jetties at Mayport, then decrease rapidly up the St. Johns River. In October 1944, an overland hurricane combined with an offshore nor'easter to generate tides that reached 12.3 feet (3.75 m) above mean sea level at Jacksonville Beach and 7.3 feet (2.2 m) above mean sea level on **McCoy Creek** (30°19'23"N., 81°40'03"W.) at Stockton Street in Jacksonville. For more details see the **Hurricane Havens Handbook for the North Atlantic Ocean** as discussed in chapter 3.

(83) In general, prevailing winds are northeasterly in fall and winter and southwesterly in spring and summer, although afternoon sea breezes often bring winds off the water in these latter seasons. Windspeeds are often highest from September through April when they exceed 17 knots about 3 to 8 percent of the time. Local climatic variations are most noticeable in the heat of summer. Along the beach, on 20 to 30 days annually, temperatures reach the 90's (°F) compared to 70 to 80 days near the city. Fog is mainly a wintertime phenomena, rolling in with any easterly wind but often remaining across the entrance when it has cleared elsewhere. In calm weather, smog from fertilizer and paper plants often obscures the channel above Dame Point. Radiation type fog, which may occur near the city, usually burns off by noon. On the average, there are 25 to 35 days annually, when visibilities drop below 0.5 mile; November through February are the most likely months. Summertime showers and thunderstorms are responsible for much of the precipitation in the area. Thunderstorms are most likely during June, July, and August, when they occur on about 10 to 16 days per month.

(84) The National Weather Service station is at Jacksonville International Airport, about 6.5 miles north-northwestward of the entrance to Trout River, and **barometers** can be compared there or checked by telephone. (See Appendix B for **Jacksonville climatological table.)**

### Pilotage, Jacksonville

(85) Pilotage is compulsory for all foreign vessels and for U.S. vessels under register. Pilotage is optional for U.S. coastwise vessels which have on board a pilot licensed by the Federal Government. Pilotage is available from St. Johns Bar Pilot Association, 4910 Ocean Street, Mayport, FL; telephone 904-246-6716, FAX 904-249-7523.

(86) The pilot station (above address) is just below the ferry terminal (30°23.7'N., 81°25.8'W.), on the port hand entering from sea, about 3 miles above St. Johns River entrance. The pilot station monitors VHF-FM channels 16, 13, and 14; works on 14. The pilot boats are 50-foot, with black hull, white superstructure, and the word PILOT on the sides. The boats monitor channel 14, work on 14.

(87) Vessels are requested to report their estimated time of arrival (ETA) about 0.5 mile E of St. Johns Lighted Buoy STJ (the sea buoy) at about 30°23'36"N., 81°18'33"W., and their draft, by radio to the pilot station at least 2 hours and again 1 hour prior their ETA at the sea buoy. Pilots report that many times they can hear radio calls but vessels are unable to pick up the pilots return transmissions. The pilot boarding area is between the sea buoy and the outermost entrance-channel buoys; a boarding ladder should be rigged 10 feet above the water. Arrangements for pilots are generally arranged in advance through ship's agents or directly by shipping companies.

(88) The St. Johns Bar Pilots Association participates in the North Atlantic right whale Early Warning System. (See North Atlantic right whales, indexed as such, chapter 3).

### Towage

(89) Tugs up to 3,500 hp, and docking pilots are available 24 hours a day at Jacksonville. Tugs use VHF-FM

channels 7A, 10, 13, 16, 18A, and 19. Docking pilots use VHF-FM channels 7A, 13, 16, and 19.

### Quarantine, customs, immigration, and agricultural quarantine

(90) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(91) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) Vessels are usually boarded at their berths. There are public and private hospitals in and about Jacksonville. Deratization and fumigation services are available.

(92) Jacksonville is a **customs port of entry.**

### Coast Guard

(93) A **sector office** is in Jacksonville. (See Appendix A for address.) Mayport Coast Guard Station is on the east side of the river about 2.7 miles above the mouth at the southerly end of the waterfront at Mayport.

### Harbor regulations

(94) There is no harbormaster for the city of Jacksonville. The Jacksonville Port Authority, a State agency and corporation, operates the Talleyrand Docks and Terminals and the Blount Island Terminal; the berthing of vessels and other aspects of the direct operation of these terminals is controlled by the Director of Marine Division. The operating staff of the port authority is directed by a managing director; the offices are at the Port Central Office Building, 2701 Talleyrand Avenue, near Talleyrand Docks and Terminals.

(95) Portions of Blount Island Terminal are within a **safety zone** and a **security zone**. (See **165.1 through 165.33, 165.720, 165.728, and 165.729**, chapter 2, for limits and regulations.)

### Wharves

(96) Of the 27 principal piers and wharves described for the port, 6 are operated by the Jacksonville Port Authority and the others are privately owned and operated. Most of the terminals have excellent highway connections. Three switching railroads connect the terminals and the three major railroads serving Jacksonville. General cargo at the port is usually handled by port cranes, and equipment is available for all lifts. Crawler and truck cranes with lifting capacities to 100 tons are available.

(97) With one exception, only the deep-draft piers and wharves are described. For a complete description of the port facilities, refer to Port Series No. 15, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.) The alongside depths given for each facility are reported depths. (For the latest such depth information, contact the Jacksonville Port Authority or the private operator.)

(98) **Gate Maritime Terminal**: five berths, capable of berthing vessels in excess of 1,000 feet along both sides of Back River (Gate Maritime Slipway), at the southeast end of Blount Island; maximum draft permitted alongside is 40 feet; deck height, 10 feet; one 40-ton crane; water and electrical connections; receipt and shipment of miscellaneous bulk materials, notably gypsum and lime rock, mooring vessels and harbor tugs, and handling heavy-lift items and military cargo; used by commercial and government vessels; owned and operated by Gate Maritime Properties, Inc.

(99) **Blount Island Terminal**: seven berths on the main St. Johns River channel on the west part of Blount Island, 10 miles above St. Johns River entrance; 5,250-foot bulkhead wharf; 38 feet alongside; deck height, 9 feet; cranes to 45 tons; handles containerized, conventional, and roll-on roll-off general cargo, automobiles, steel products, kraft paper, and lineboard rolls; operated by Jacksonville Port Authority. A 600-foot dock on the west side of Blount Island is operated by the port and used for the loading and unloading of automobiles.

(100) **St. Johns River Coal Terminal**: on main St. John River channel east of Jacksonville Port Authority berths, 10 miles above St. Johns River entrance; 808-foot bulkhead wharf; 38 feet alongside; deck height 9 feet 45-ton clamshell bucket unloader, unloads coal on to a conveyor system which transports coals to a coal-fired generation station 3.5 miles inland, unloading rate 750-1500 tons per hour; operated by St. Johns River Power Park.

(101) **Celotex Corp. Dock**: west side of Blount Island Channel (old river channel), 0.35 mile northward of the southwest tip of Blount Island; offshore wharf with 20-foot face, 536-foot berth with dolphins; 32 feet alongside; deck height, 10 feet; adjustable receiving hopper on wharf connected by conveyor to open storage area, delivery rate about 1,100 tons per hour; handles gypsum rock.

(102) **North Side Generating Station Wharf**: northwestern side of Blount Island Channel, 1.15 miles northeastward of Kaiser Gypsum Co. Wharf and 0.2 mile southwestward of the Blount Island highway bridge; offshore wharf with 60-foot face, 700 feet with mooring dolphins; 20 feet alongside; deck height, 13½ feet; fuel oil for plant consumption; operated by Jacksonville Electric Authority.

(103) **Amerada Hess Corp., Jacksonville Terminal Wharf**: north side of St. Johns River at mouth of Broward River, 0.3 mile east-northeastward of Drummond Point; offshore wharf with 300-foot face, 800 feet with mooring dolphins; 38 feet alongside; deck height, 12 feet; handles petroleum products, Bunker C, and occasional loading of harbor bunkering barges.

(104) **Drummond Point Terminal**: extending from Drummon Point; offshore wharf with 143-foot face, 1,000-foot berth with dolphins; 38 feet alongside; deck height, 12 feet; hose-handling derrick; handles petroleum products and loading harbor bunkering-barges; operated by Gulf Oil Refining and Marketing Co. and American Oil Co.

(105) **U.S. Gypsum Co. Pier**: just south of Trout River entrance on west side of St. Johns River at 30°23'01.5"N., 81°37'55.0"W.; pier 616 feet long and 42 feet wide, berthing only along south side, usable space 455 feet with dolphins; 28 feet alongside; deck height, 6 feet; self-unloading vessels discharge into a hopper served by a conveyor system, which extends full length of pier to an open storage area ashore, delivery rate 1,000 tons per hour; handles gypsum rock.

(106) **ST Services Wharf**: 0.34 mile southward of U.S. Gypsum Co. Pier, west side of river; offshore wharf with 80-foot face, 1,000 feet with mooring dolphins; 38 feet alongside; deck height, 12 feet; handles petroleum products; operated by Philips Petroleum Co. and ST Services.

(107) **PCS Phosphate**: on south side of entrance to Long Branch Creek, offshore wharf consisting of a line of dolphins connected by catwalks, 800-foot berth; 38 to 40 feet alongside; deck height, 10 feet; 2 loading towers, each with a loading rate of 3,000 long tons per hour; towers are served by conveyor from phosphate storage silos, total capacity 30,000 tons; handles phosphate rock, phosphoric acid, and phosphatic products.

(108) **Alton Box Board Co. Fuel Dock**: 30°22'03"N., 81°37'31"W.; offshore wharf with mooring dolphins in line with face, 51-foot face, 250-foot berth with dolphins; 24 feet alongside; deck height, 10 feet; hose-handling derrick; pipeline connects wharf and storage tanks; handles fuel oil for plant consumption.

(109) **J. Dillon Kennedy Generating Station Wharf**: 30°21'53"N., 81°37'22"W.; offshore wharf with 101-foot face 220-foot berth with two dolphins; 36 feet alongside; deck height, 10 feet; handles fuel oil for plant consumption; operated by Jacksonville Electric Authority.

(110) **Coastal Fuels Marketing, Inc. Terminal wharf**: west side of river, 0.29 mile southeastward of J. Dillon Kennedy Generating Station Wharf; offshore wharf with 140-foot face, 750-foot berth with dolphins; 34 feet alongside; deck height, 13 feet; hose-handling derrick; handles asphalt products.

(111) **Chevron Tanker Dock**: west side of river, 0.16 mile south of Belcher Oil Co. Terminal Wharf; 50-foot face, 280-foot berth with dolphins; 31 feet alongside; deck height, 12 feet; hose-handling derricks; handles petroleum products; operated by Chevron USA, Inc.

(112) **Jacksonville Port Authority, 8th Street Terminal**: west side of river at 30°20'42"N., 81°37'20"W.; 700-foot bulkhead wharf; 36 feet alongside; deck height, 9 feet; handles automobiles; operated by Joyserv Co. Ltd.

(113) **Jacksonville Port Authority, Talleyrand Docks and Terminals, Berths 1, 2, 3, 4, and 5** (Berth 1 being the most northerly of the five): bulkhead wharf providing 4,100 feet of continuous berthing space immediately northward of the JPA 8th Street Terminal; deck heights, 9 feet; 36 feet alongside; handles containerized cargo, conventional general cargo, refrigerated cargo, automobiles, molasses, bagged coffee beans, caustic soda, lumber, steel products, chemicals, and lignin sulfonate; berth 1 also handles petroleum products; Municipal Docks Railway connects the terminal with all trunkline carriers serving the port.

(114) **Crowley American Transport Trumbull Asphalt Dock**: west side of river 0.7 mile north of the Matthews Highway Bridge; 425-foot face; 17 feet alongside; deck height 9 feet; receipt of asphalt.

(115) **Crowley American Transport Barge Dock**: west side of river immediately south of the CAT Trumbull Asphalt Dock and 0.5 mile north of the Matthews Highway Bridge; 3 mooring dolphins extend out in a line from the West bank 430 feet; 260-foot face; 20 feet alongside; deck height, 9 feet; 3 deck roll-on/roll-off ramp; handles containerized ro-ro general cargo, automobiles, and heavy-lift items.

(116) **Commodore's Point Terminal Wharf**: west side of the river at Commodore Point; 700-foot face; 28 feet alongside; deck height, 5½ feet; handles conventional general cargo, petroleum products, chemicals bulk cement, bananas, and fertilizer; various operators.

(117) **Jacksonville International Terminals Co.**: north side of the river at 30°19'19"N., 81°38'56"W., at the sight of the old Jacksonville Shipyards; 5 berths available ranging from 300 feet to 900 feet; alongside water depth to 42 feet; deck height, 8 feet; 250-ton crane; container and break bulk handling equipment; stevedoring and terminal services for both ro/ro and lo/lo operations.

(118) **South Side Generating Station Wharf**: south side of river at 30°19'01"N., 81°38'50"W.; offshore wharf with 100-foot face, 428-foot berth with dolphins; 30 feet alongside; deck height, 12 feet; two hose-handling derricks; handles fuel oil for plant consumption; operated by Jacksonville Electric Authority.

### Supplies

(119) Supplies of all kinds in any quantity can be obtained, and all types of marine services are available in Jacksonville. Freshwater is piped to the terminals. Fuel oil and diesel oil are available at the oil terminal wharves and by tank barge; most vessels bunker by barge while alongside.

### Repairs

(120) A small shipyard is on the river at the junction with Sisters Creek (Intracoastal Waterway) and has a 4,000-ton marine railway. A yard about 3 miles above the mouth of the St. Johns River has a 200-ton and a 500-ton marine railway that can handle vessels up to 100 feet in length with complete shipyard facilities available. A shipyard on the west bank of the river at Commodore Point has a floating drydock with a 2,800-ton lift capacity for vessels up to 389 feet in length and 3 wet berths for vessels up to 700 feet in length and 25-foot draft with complete shipyard facilities available.

(121) In addition to the shipyards, Jacksonville has all types of specialized marine manufacturing, sales, and repair firms which handle such items as electronic equipment, electric motors and other components,

ventilation and air conditioning systems, shafts and propellers, etc.

### Small-craft facilities

(122) Excellent facilities are available in Jacksonville. The municipal marina at Metro Park is on the north side of the river about 1.2 miles west of Commodore Point. Additionally, the city has floating docks at the Jacksonville Landing along the north side of the river between Main Street and Acosta bridges. A city dockmaster may be reached at 904-630-0839. Public restrooms are at Jacksonville Landing and Metro Park. A large illuminated fountain is in a city park on the south bank of the river between the Main Street and Acosta bridges. Small-craft should exercise caution, as currents become quite strong in this section of the river. There are a number of other modern well-equipped marinas and boatyards in Jacksonville; the major facilities are on the intracoastal waterway, Ortega River and Trout River. Supplies, services, and repairs are available for all types of yachts. (See the small-craft facilities tabulation on chart 11491 for services and supplies available.) Other small-craft facilities on St. Johns River above Jacksonville are in Goodbys Creek, Doctors Inlet, and Julington Creek.

### Communications

(123) The port is served by three railroads. The Jacksonville Port Authority operates its own switching railroad, which serves the Talleyrand Docks and Terminals. Excellent highways reach the city, and there is a toll expressway system providing rapid transportation within the city; the primary highways leading from Jacksonville are Interstate Highways 10 and 95, and U.S. Routes 1, 17, and 90. Jacksonville International Airport, operated by the Jacksonville Port Authority about 10 miles northward of the heart of the city, is served by six airlines. Both passenger and air freight service is available. There are also three general-aviation airports in the city. Numerous steamship lines connect with most of the principal foreign and domestic ports. Barge service is available for the Intracoastal Waterway, coastwise, and up the St. Johns River as far as Sanford.

## Chart 11490

(124) **Mayport Basin** is on the south side of the St. Johns River just inside the entrance jetties and westward of **St. Johns Point.** A deep channel leads along the inshore end of the south jetty to the basin. It is marked by a **255° lighted range,** lights, and lighted and unlighted buoys. Due to the relatively short distance between the lights of the range, sensitivity is poor. Mariners are advised to use the range with caution. Dangerous cross currents are reported to exist in the entrance to Mayport Basin; mariners are advised to enter at slack water or at a recommended speed of 13 knots. The waters of the turning basin are within a **prohibited area** of the U.S. Naval Station Reservation; commercial and pleasure vessels are prohibited from entering except in cases of extreme emergency. (See **334.500**, chapter 2, for limits and regulations.)

(125) **Mayport** is a town on the south bank of St. Johns River, 3 miles inside the entrance jetties. It has a ferry connection with the town of **Fort George Island** across the river. The wharves at Mayport are private and are used by fishing vessels. A Coast Guard station is at the southerly end of the waterfront. There is a marina and a yacht basin with reported depths of about 10 feet. Gasoline, diesel fuel, water, ice, restrooms, charter boat hire, showers, electricity, wet and dry storage, and marine supplies are available. Hull, engine and electronic repairs can be made. Restaurants are nearby.

## Chart 11491

(126) The Intracoastal Waterway crosses the St. Johns River 5.3 miles from the entrance through Sisters Creek on the north and Pablo Creek on the south.

(127) A shipbuilding and drydock company is on the north side of the river and on the east side of Sisters Creek. The firm builds steel-hulled tugs and fishing vessels and does all kinds of repair work on commercial and Government vessels; work on pleasure craft, except very large yachts, is not done here. There is a 4,000-ton marine railway, several mobile cranes, complete shop facilities, and berths for vessels of up to 585 feet. The marine railway is on the St. Johns side of the yard, while the construction work is done on the Sisters Creek side. This firm has built a vessel 220 feet long.

(128) **Blount Island,** low and sandy with fringing marshes, is on the north side of the St. Johns River about 9 miles above the entrance. The Jacksonville Port Authority terminal near the southwestern tip of the island, and Gate Maritime Terminal in Back River (Gate Maritime Slipway) at the southeastern tip of the island have been described under "Wharves" for the Port of Jacksonville. Back River is a restricted area and security zone. (See **334.515 and 165.729**, chapter 2, for limits and regulations.)

(129) **Blount Island Channel,** a cutoff bend of the St. Johns River, extends from the main river channel around the northern side of Blount Island and rejoins the main channel at the southwestern tip of the island. The channel is practically divided near its midpoint by four low fixed bridges with least clearances of 18 feet horizontally and 5 feet vertically. Overhead power cables, with clearances of 175 feet, are on both sides of the southwesternmost highway bridge. The Federal project depth for the channel is 30 feet, but the controlling depth is usually considerably less than project depth. (See Notice to Mariners and chart tabulation for the latest controlling depths.) Two deep-draft private wharves on the marked western leg of Blount Island Channel are described under Jacksonville "Wharves".

(130) A fixed highway bridge with a clearance of 169 feet crosses St. Johns River just above Blount Island at Dames Point.

(131) **Broward River,** on the north side and 13 miles from the entrance to St. Johns River, has depths of 1 to 3 feet to Cedar Heights. The Heckscher Drive (State Route 105) highway bridge at the mouth has a 40-foot bascule span with a clearance of 13 feet. Overhead power cables at the bridge have a least clearance of 34 feet. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) In 2010, a fixed highway bridge with a design clearance of 20 feet was under construction; upon completion, it will replace the bascule bridge.

(132) The offshore wharf and shore facilities of a U.S. Navy Fuel Depot are 1.2 miles southwestward of **Drummond Point** on the northwest side of the St. Johns River, just below the mouth of the Trout River. The wharf has a 351-foot face, 660 feet of berthing space with dolphins, 38 feet alongside, and a deck height of 11 feet. Pipelines extend from the wharf to storage tanks onshore. The fuel depot is in a **restricted area.** (See **334.510**, chapter 2, for limits and regulations.)

(133) **Trout River,** north of downtown Jacksonville, has depths of 7 feet to the mouth of Ribault River and 3 feet to the highway bridge 4.5 miles above the mouth. The entrance is marked by daybeacons. A small repair yard is on the east side of a small cove on the south side of the river about 0.4 mile above the entrance. The yard has berths, electricity, water, two 6-ton lifts, and a marine railway that can handle craft up to 85 feet long or 200 tons; hull and engine repairs can be made. Depths of 8 feet are reported in the approach and alongside. The Main Street (U.S. Route 17) highway bridge 0.9 mile above the entrance has a fixed span with a clearance of 29 feet. The highway bridge, adjacent to the westward, except for the channel span, remains as a fishing pier. The overhead power cable at the bridge has a clearance of 38 feet. The railroad bridge just upstream has a swing span with a channel width of 46 feet and a clearance of 2 feet. (See **117.1 through 117.59 and 117.337**, chapter 2, for drawbridge regulations.) The overhead power cable, 0.5 mile above the bridge, has a clearance of 45 feet. A marina on the south side, just east of the Main Street bridge, has berths, electricity, gasoline, diesel fuel, water, a launching ramp, and storage; outboard engines can be repaired. The Interstate 95 highway bridge, 2 miles above the mouth, has a fixed span with a clearance of 34 feet.

(134) State Route 115 highway bridge, 4.5 miles above the mouth, has a 40-foot fixed span with a clearance of 18 feet. The overhead power cable just westward of the bridge has a clearance of 45 feet.

(135) Groups of piles, sunken wrecks, and barges are near the shores of Trout River. There are numerous private piers and landings on the river. The Jacksonville City Zoo is on the north side of the river downstream of the first bridge.

## Charts 11492, 11487, 11495, 11498

(136) **St. Johns River south of Jacksonville bridges**. Many pleasure craft ply the river south of Jacksonville, going as far as Sanford. Commercial traffic is light and consists of barges hauling petroleum products for oil company distributors and fuel oil for power plants; the oil barges are loaded at Jacksonville and towed to Palatka and Sanford.

(137) The route from Jacksonville to Sanford, a distance of 123 miles, is well marked by lights and daybeacons, and is comparatively easy to navigate with the aid of the charts. However, if a local pilot is desired, fishermen from Jacksonville, Palatka, Welaka, or Sanford will serve. The upper reaches of the river are partly obstructed by hyacinths at certain times of the year, and floating obstructions are a continual menace to navigation. A program for eradication of obnoxious aquatic plant growth, consisting mostly of spraying, is carried on jointly by the Corps of Engineers and the Florida Game and Fresh Water Fish Commission. The unimproved creeks tributary to the St. Johns River may be obstructed by logs and hyacinths.

(138) Fish traps, pilings, and remains of old wharves are generally found close inshore or on the bars in midstream. Fish traps are usually constructed of small poles and are frequently destroyed and rebuilt. In some cases, they extend several feet above high water and can be avoided in daylight hours. In some places they have been broken off below the water and are a serious menace to small craft.

### Channels

(139) A Federal project provides for a channel 13 feet deep from Jacksonville for 48 miles to Palatka, thence 12 feet deep for 75 miles to Sanford, and thence 5 feet deep for about 18 miles to Lake Harney. This project, however, has not been maintained in recent years because of the light commercial traffic. (See the charts for controlling depths.)

### Bridges

(140) General drawbridge regulations and opening signals for bridges over the St. Johns River and tributaries are given in **117.1 through 117.49**, chapter 2. Special drawbridge regulations for certain bridges that supplement the general regulations are referenced with the area description of the waterway.

## Chart 11492

(141) **Ortega River** is about 2 miles south of Fuller Warren Bridge (30°18.9'N., 81°40.3'W.) on the west side of the St. Johns River. It is the major yachting center in the Jacksonville area. In 1983, the reported controlling depth was 6 across the bar at the entrance, thence 7 feet

to the railroad bridge, thence 5½ feet for a distance of 1.4 miles above the second highway bridge.

(142) The Grand Avenue (State Route 211) highway bridge, at the entrance to Ortega River connecting **Ortega** and **St. Johns Park** has a bascule span with a clearance of 9 feet. The Roosevelt Boulevard (U.S. Route 17) highway bridge, 0.7 mile upstream, has dual fixed spans each with a clearance of 45 feet. The northern 180-foot section of the former highway bascule bridge immediately westward remains as a fishing pier. An overhead power cable with a clearance of 65 feet is at the fishing pier. The railroad bridge immediately westward of the fishing pier has a 40-foot bascule span with a clearance of 2 feet. The Timquana Road highway bridge crossing the river 1.9 miles above the railroad bridge has a fixed span with a clearance of 20 feet.

(143) A modern well-equipped marina and boatyard are on the northwest side of the Ortega River about 0.4 mile above the first bridge. The marina has about 235 slips and 20 berths and can accommodate boats up to 60 feet in length with a reported approach and alongside depth of 6 feet in 2007. Gasoline, ice, water, electricity, and showers are available with a shopping center and restaurants nearby. The boatyard, closed Sundays, makes complete hull and engine repairs; a 50-ton travel lift is available.

(144) Another marina on the northwest bank of the Ortega River just northeastward of the twin highway bridges has berths for 75 boats to 52 feet in length, with reported depths of 10 feet in 1983. A 25-ton mobile lift and a 3½-ton forklift are available for complete repairs. Gasoline and oil, diesel fuel, water, ice, electricity, and other supplies and services are available. On the southwest side of this bridge is the yard of a yacht-building corporation. About 0.2 mile above the twin bridges, on the northwest side, there is another marina for yachts with a reported approach depth of 4.5 feet and alongside depth of 7.0 feet in 2004 that can provide berths with electricity, gasoline, diesel fuel, water, ice, a pump-out station and marine supplies. A 50-ton lift is available for hull, engine and electronic repairs. A shopping center and a cafeteria are within three blocks of the marina.

(145) **Cedar River,** a tributary of the Ortega, enters from the northward about 1.5 miles above the mouth. In 1983, the reported controlling depth was 6 feet from the entrance to the highway bridge 1.4 miles above the entrance. The Blanding Boulevard highway bridge, 0.6 mile above the mouth, has twin fixed spans with a horizontal clearance of 30 feet and a vertical clearance of 16 feet. An overhead power cable 100 yards above the bridge has a clearance of 43 feet. The San Juan Avenue highway bridge, 1.4 miles above the mouth, has a 39-foot fixed span with a clearance of 11 feet at the center.

(146) On the west side of St. Johns River, 4 miles southward of Fuller Warren Bridge at the entrance to **Pirates Cove**, is the private Florida Yacht Club. **Special anchorages** are off the entrance to Pirates Cove. (See **110.1 and 110.73**, chapter 2, for limits and regulations.)

(147) **Goodbys Creek,** on the east side of the St. Johns River about 7 miles southward of Fuller Warren Bridge, has reported depths of about 2 feet to just above the twin bridges of State Route 13, about 0.3 mile above the entrance; the twin 32-foot spans have a clearance of 11 feet. The entrance is marked by a light, and pilings border the channel. Local knowledge is advised. Two small marinas are on the north side of the creek, on either side of the bridges; gasoline and oil, berths, water, ice, and some marine supplies are available. The lower marina has a 15-ton hoist; hull, engine, and electronic repairs can be made. In 1983, with local knowledge, 6 feet was available to the lower marina.

(148) Jacksonville Naval Air Station extends along the west side of the St. Johns River about 0.7 mile northwestward of and 2.5 miles south-southwestward of **Piney Point.** A large pier is close south of Piney Point. In 1982, the dredged channel leading to the pier had a controlling depth of 14 feet to the outer end of the pier except for shoaling to 13 feet along the northeast edge of the basin, thence 16 feet north and 11 feet south of the pier. Another dredged channel leads to a small basin at the station about 2.4 miles southward of Piney Point. In 1978, the controlling depth was 9 feet in the channel and 6 feet in the basin except for shoaling to 3 feet at the west end.

(149) The twin fixed spans of Highway 295 bridge, with clearances of 65 feet cross the St. Johns River just below the Naval Air Station, 2.5 miles southward of Piney Point.

(150) In 1985, a sunken wreck was reported near the Highway 295 bridge in about 30°11'21"N., 81°39'33"W. In 1996, a submerged wreck was about 1,000 yards southward of the bridge, in about 30°11.0'N., 81°41.0'W.

(151) **Orange Park,** 10 miles south of Fuller Warren Bridge on the west bank of the St. Johns River, is a winter resort.

(152) In 1986, a 10-foot shoal spot was reported about 1.1 miles southeast of Orange Park in about 30°09'14"N., 81°41'11"W.

(153) **Doctors Inlet,** 10.5 miles southward of Fuller Warren Bridge, is the entrance to **Doctors Lake** from the St. Johns River. In 1983, the inlet had a reported controlling depth of 12 feet, thence general depths of 7 to 12 feet to the head of the lake. Because of extensive shoals on both sides of the inlet, midchannel courses must be steered from abeam of Light 10 until through the inlet. The lake is an excellent fishing ground for sportsmen and a haven for small boats in stormy weather. U.S. Route 17 fixed highway bridge with a clearance of 37 feet crosses the mouth of Doctors Inlet.

(154) There is a well-equipped marina on the south side of Doctors Inlet immediately west of the highway bridge. There are 35 covered slips for boats of up to about 40 feet and 7 open 24-foot slips; depths to the berths are reported to be about 5 feet. Gasoline pumps are on a bulkhead about 300 feet long; sailboats too large for the open slips may moor here. Ice, water, electricity, and

some marine supplies are available. Also, on the south side of the inlet just eastward of the bridge is another marina. The entrance channel is marked by private daybeacons. In 1990, the reported alongside depth was 6 feet. Ice, water, electricity, and some marine supplies are available. A 20-ton mobile lift is available, and hull repair can be made.

(155) In 1983, many pilings, visible at low tide, but submerged at high tide, were reported in Doctors Lake: several along the northern lakeshore between Orange Point and Macks Point, others off Cane Point, Dixton Siding, and Catfish Point. An old target area and submerged pilings are reported in Mill Cove.

(156) **Swimming Pen Creek,** with two small arms at its head, is entered through an unmarked channel at the south end of Doctors Lake. A fixed highway bridge with a clearance of 9 feet crosses the creek about 0.4 mile above the entrance. With local knowledge depths of about 4 feet can be carried to the bridge, thence about 1 to 2 feet to the head of east and west arms. An overhead power cable with a clearance of 31 feet crosses the creek just above the bridge. Piles, some submerged, are in the creek; exercise extreme caution.

(157) **Julington Creek,** 13 miles south of Fuller Warren Bridge on the east bank, had a reported controlling depth of 5 feet in 1983, to State Route 13 highway bridge about a mile inside the entrance, thence 4½ feet for another 1.3 miles. The highway bridge has a 44-foot fixed span with a clearance of 15 feet. An overhead power cable with a clearance of 42 feet crosses the creek at the bridge on the east side.

(158) On the north bank of the creek, just westward of the bridge is a fish camp with berths, electricity, gasoline, water, ice, launching ramp and limited marine supplies and a marina with berths, gasoline, diesel fuel, water, ice, and marine supplies. A 15-ton mobile lift is available and hull repairs can be made. On the eastward side of the bridge is a marina with berths, electricity, gasoline, water, ice and marine supplies. A 10-ton mobile lift is available, and all types of repairs can be made. The southern city limit of Jacksonville follows the north side of Julington Creek.

(159) **Black Creek,** 18 miles southward of Fuller Warren Bridge at Jacksonville, is navigable for vessels of about 8-foot draft for about 15 miles to the town of **Middleburg.** In 1983, the reported controlling depth was 7 feet to the railroad bridge. The creek is used by small craft as a refuge during hurricanes. The trees along the bank form an excellent windbreak. Just inside the entrance are U.S. Route 17 twin fixed highway bridges with clearances of 30 feet. About 2.2 miles above the highway bridge an overhead power cable has a clearance of 47 feet. The railroad bridge, 5 miles above the mouth, has a 44-foot fixed span with a clearance of 20 feet. Above the railroad bridge up Black Creek to Middleburg are numerous bridge and cable crossings. The minimum vertical clearances are: 20 feet in Black Creek to the junction with North Fork and South Fork; 16 feet in North Fork; and 13 feet in South Fork. The bridges minimum horizontal clearances are: 40 feet in Black Creek to North Fork and South Fork; 30 feet in North Fork; and 40 feet in South Fork.

(160) **Green Cove Springs,** a town on the west bank of the St. Johns River about 20 miles south of Jacksonville's Fuller Warren Bridge, has a number of private piers and a public concrete T-pier owned by the city. A hotel and restaurant are three blocks up the street leading from the foot of the municipal pier. A **customs station** is at Green Cove Springs.

(161) The many long piers and the extensive group of buildings and other facilities just southeastward of Green Cove Springs were formerly part of a U.S. Naval Station, but are now included in a privately owned industrial park; the northwesternmost pier is used by a small shipyard which builds steel barges, and the other piers are used for the dismantling of vessels by a scrap-metal company. A large orange and white checkered tank in the industrial park is prominent from the river. A marina at pier 11 has berths, electricity, water, ice, and 30-ton mobile lift; all types of repairs can be made. A boatyard that repairs company-owned tugs and barges is southwest of the long piers on the west side of the entrance to **Red Bay Creek**. The yard has a 1,000-ton synchrolift drydock and transfer system. Emergency hull, engine, and electronic repairs can be made.

(162) A section of a former bridge 2 miles southeastward of Green Cove Springs extend out into the river 500 yards from the south shore and 500 yards from the north shore; the rest of the bridge was removed. State Route 16 highway bridge, 0.5 mile upstream, crosses the river from **Red Bay Point** to **Smith Point;** it has a fixed span with a clearance of 45 feet. There are submerged obstructions in the river from **Magnolia Point,** 4 miles below the bridge, to Smith Point. The areas are outlined on the chart and should be avoided.

(163) **Trout Creek** and **Sixmile Creek** have a common entrance 24 miles south of Fuller Warren Bridge. These creeks are navigable for about 3 or 4 miles upstream. In 1983, the reported controlling depth was 4½ feet to Hardwood on Trout Creek, and a depth of 4 feet could be carried with local knowledge for about 2.2 miles on Sixmile Creek. State Route 13 highway bridge, 0.5 mile above the entrance of Trout Creek, has a 38-foot fixed span with a clearance of 14 feet. Berths, gasoline, electricity, water, ice, minor repairs, limited marine supplies, and launching ramps are available at small fish camps in **Palmo Cove,** at the head of the common entrance, in Trout Creek, just above the bridge, and in **Florence Creek,** about 1 mile northwestward of Palmo Cove. State Route 13 highway bridge, 1 mile above the entrance to Sixmile Creek, has a 40-foot fixed span with a clearance of 12 feet. An overhead power cable with a clearance of 40 feet crosses the creek just below the bridge.

(164) **East Tocoi**, 32 miles south of Fuller Warren Bridge, is a small fish camp on the east side of the river. Gasoline, ice, and water are available.

## Chart 11487

(165) **Ninemile Point**, south of Jacksonville, is a sharp point at a wide bend of the river. An overhead power cable across the outside bend about 1.5 miles east of the point has a clearance of 38 feet.

(166) **Rice Creek,** 44 miles south of Jacksonville, is used occasionally by fuel barges going to the paper plant, about 2.3 miles above the mouth, near the head of its southerly branch. Paper from the plant is shipped by rail and barge. The creek is entered through a dredged channel which leads westward from St. Johns River to near the head of the southerly branch. In 2003, the reported centerline controlling depth was 12 feet from St. Johns River to the mouth of the creek, thence in 1985, 10 feet at midchannel to near the head of the southerly branch. The channel is marked by a **273.3°** lighted approach range, lights, and daybeacons. The railroad bridge, 0.8 mile above the mouth, has a swing span with a channel width of 40 feet and a clearance of 2 feet. (See **117.1 through 117.49 and 117.324**, chapter 2, for drawbridge regulations.) U.S. Route 17 highway bridge, 1.0 mile above the mouth, has twin fixed spans with a clearance of 45 feet. The overhead power cables at the bridge and 1.1 miles westward have clearances of 60 feet and 59 feet, respectively.

(167) Putnam County Barge Port, about 0.6 mile southward of the entrance to Rice Creek, has a 410-foot marginal wharf with 8 feet reported alongside. Water, electricity, railroad connections, and warehouse space are available. Traffic is mostly in paper products. Transient pleasure craft may moor alongside the wharf at their own risk.

(168) An overhead power cable, with a clearance of 91 feet over the main channel and 60 feet elsewhere, crosses St. Johns River about 1.6 miles southward of the channel into Rice Creek.

(169) **Palatka** is an important upriver town on the St. Johns River 48 miles south of Jacksonville. There are several sawmills; wood chips are shipped from them by rail to the papermill on Rice Creek. The marina here has good facilities for yachts. There are over 30 berths with water and electricity at finger piers in front of a large building about 0.3 mile southwestward of U.S. Route 17 highway bridge. Gasoline and limited marine supplies are available. The city pier, just northeastward of the marina, has berths, electricity, and water. Only overnight berthing is permitted. U.S. Route 17 fixed highway bridge across St. Johns River at Palatka has a clearance of 65 feet.

(170) **Wilson Cove,** 0.7 mile south of Palatka, is very shallow and fouled by hulks, piling, and concrete-ballast blocks.

(171) Overhead power cables with a reported least clearance of 81 feet cross the St. Johns River about 2.5 miles above the highway bridge.

(172) An overhead power cable with a reported clearance of 85 feet crosses the river about 3.5 miles above the highway bridge at Palatka.

(173) Along the southern shore of the St. Johns River, about 4.5 miles above Palatka between **San Mateo** and **Edgewater,** submerged piling of old piers are a menace to inshore navigation. Keep at least 150 yards off this shore. A submerged pile is on the northwest side of the river opposite Edgewater, in about 29°36'00"N., 81°36'30"W.

(174) A 25-ton mobile lift is available at San Mateo for do-it-yourself repairs.

(175) In 2002, shoaling to 5.4 feet was reported in St. John River between Murphy Island Daybeacon 18 and Light 20.

(176) **Dunns Creek,** 6.5 miles above Palatka, is the approach to Crescent Lake, and is used by pleasure and fishing boats. In 2001, the controlling depth for 7.5 miles to the lake was 3.2 feet. Northeast storms raise the height of water in the creek. Some of the bends in the creek are sharp.

(177) The eastern entrance at **Polly Creek** is just to the west of the mouth of Dunns Creek.

(178) **Murphy Creek** crosses Dunns Creek 0.5 mile inside the entrance. The easterly section of the creek is obstructed by a row of submerged pilings in Dunns Creek.

(179) U.S. Route 17 fixed highway bridge crosses Dunns Creek 0.9 mile above the mouth and has a clearance of 45 feet. Overhead power and television cables are N of the bridge with a clearance of 55 feet.

(180) **Crescent Lake** is about 11 miles long and has a maximum width of about 2 miles. The general depths in 1975 were between 8 and 13 feet, gradually shoaling toward shore. There are no periodic tides in the lake; the range of tide in Dunns Creek becomes zero near its end. Sudden squalls in the lake cause a chop dangerous to small boats. In the center of the lake, the bottom is soft mud. Near the shore, the bottom changes to hard sand. Large patches of hyacinth drift about the lake with the changing wind. The lake appears to be free of sunken logs, but when navigating near the shore a close watch should be maintained for broken-off piling and sunken logs. On the west side of the lake, about 1 mile above Crescent City, is a motel and fishing resort where berths with electricity, water, ice, gasoline, and limited marine supplies are available.

(181) **Crescent City** is on the west side of the lake about 6.5 miles from the north end. There are a municipal pier and a number of private piers, some of which are in ruins. The municipal pier had 10 feet reported alongside in 1983.

(182) In 1983, it was reported that a draft of 2 feet could be taken into and for a distance of 5 miles up **Haw Creek** at the head of Crescent Lake. Above this point navigation is obstructed by trees and logs. About 3 miles above

the mouth is the hulk of a gunboat sunk during the Civil War.

(183) **Dead Lake** is about one mile long and 0.5 mile wide at the head of Crescent Lake and, in 1963, had a general depth of 8 feet in the center. St. Johns Park and the ruins of a dock are on the northeast shore. Considerable hyacinths are found at times in the lake.

## Chart 11495

(184) There are many fishing camps, resorts, and small marinas along the St. Johns River as far as Lake George; most have gasoline pumps, and some have moorage and other facilities. A recreation map showing the various facilities may be obtained from the Putnam County Chamber of Commerce, Box 550, Palatka, FL 32077.

(185) At **Buffalo Bluff,** 9.8 miles above Palatka, the St. Johns River is crossed by the railroad bridge which has a bascule span with a clearance of 7 feet. There are three boatyards at **Stokes Landing,** 1.6 miles southward of the railroad bridge at Buffalo Bluff. The southernmost has a 40-ton marine railway and complete yard facilities for hull, engine and electrical repairs. The other two boatyards are used for shipbuilding and maintenance of company-owned tugs and barges.

(186) The entrance to the **Cross Florida Greenway** is on the west side of the St. Johns River 2.4 miles southward of the railroad bridge at Buffalo Bluff. The canal is primarily open to barge traffic, but also pleasure and fishing boats. It extends from St. Johns River for 93 miles to the Gulf of Mexico at a point about 3.0 miles N of the Crystal River power plant.

(187) In 1968, the **Henry Holland Buckman Lock** and **Rodman Dam** were completed, and the lock was open for use; it is the easternmost lock and is about 1.5 miles westward of the canal entrance from the St. Johns River. The lock is 84 feet wide and 600 feet long, has a depth of 14 feet over the gate sills, and a lockage time of 15 to 20 minutes; it is operated from 0800 to 1130 and 1200 to 1600 daily until the entire barge canal is completed. Traffic lights are in operation at both ends of the lock. (See **207.160**, chapter 2, for regulations.) Rodman Dam, across the Oklawaha River about 8 miles above its junction with the St. Johns River, blocks navigation of the Oklawaha River above the dam, as there is no lock; the upper Oklawaha River is reached through the eastern entrance of the barge canal from the St. Johns River, through Henry Holland Buckman Lock, thence through Lake Ocklawaha, the pool formed by Rodman Dam.

(188) In 1983, the canal had been completed from the St. Johns River to the lock and for about 4.7 miles westward of the lock, where it enters Lake Ocklawaha. This completed section of the canal is unmarked; it is crossed about 1.6 miles westward of Henry Holland Buckman Lock by State Route 19 fixed highway bridge with a clearance of 68 feet; an overhead cable east of the bridge has a clearance of 85 feet. In traversing Lake Ocklawaha to the upper Oklawaha River, prior to completion of the dredged barge canal, it is advisable to follow the course of the Oklawaha River bed through the lake, which is marked by aids to navigation installed by the Corps of Engineers; the markers, on iron pipes, are red on the right side of the river and green on the left side when going down the lake (away from Henry Holland Buckman Lock). Caution should be exercised since numerous floating obstructions may be encountered in the lake. The lake extends about 13 miles to the site of the **Eureka Lock and Dam,** construction of which has been suspended, but which has a navigation bypass; boats of less than 3-foot draft can continue up the Oklawaha River from Eureka Lock and Dam to the junction with **Silver Springs Run,** a distance of about 17 miles; navigation of the river from Silver Springs Run to **Moss Bluff Lock and Dam,** about 12 miles, and from Moss Bluff Lock to **Lake Griffin,** about 8 miles, may not be feasible at times due to low water. Vessel operators should verify water levels with the Moss Bluff lockmaster (telephone 352-288-4171). Navigation regulations for the Moss Bluff Lock and Dam are given in **207.169**, chapter 2.

(189) Information on the pool level above Moss Bluff Dam is given in **207.170**, chapter 2. State Route 316 fixed highway bridge across the barge canal and Oklawaha River about 1 mile above the Eureka Dam has a clearance of 65 feet at the canal. The minimum clearances of the several highway swing bridges across the Oklawaha River above Eureka Dam are 8 feet vertical and 34 feet horizontal. (See **117.1 through 117.59 and 117.319**, chapter 2, for drawbridge regulations.)

(190) In 1986, the Federal government de-authorized the Cross Florida Barge Canal project and in 1990, turned the right of way over to the State of Florida. It is operated by the Office of Greenways and Trails under the State of Florida Department of Environmental Protection. For current information on the Cross Florida Greenway, contact the Office of Greenways and Trails at (850) 488-3701 in Tallahassee, FL.

(191) At the settlement of **Saratoga,** on the east side of the St. Johns River 2.3 miles southward of the Cross Florida Barge Canal entrance, there is a small private wharf with clock faces on the cupola of the shelter roof.

(192) A marine resort is on the east side of the river 0.9 mile southeastward of the charted cupola at Saratoga. There is a long landing and float here for moorage of about 100 boats, with reported depths of 8 feet. Gasoline and oil, diesel fuel, water, electricity, ice, and limited marine supplies are available.

(193) **Welaka** is a town on the east side of the St. Johns River, 18 miles above Palatka and 66 miles south of Jacksonville. There are several fishing camp landings, with depths of 5 to 7 feet alongside, where gasoline, water, ice, and some marine supplies can be obtained. A marine railway can haul out boats up to 35 feet for general repairs. Provisions are available.

(194) **Oklawaha River** has its source in the system of large lakes in the central part of the peninsula of Florida and flows in a general northerly direction, then eastward, emptying into the St. Johns River 19 miles south of Palatka. Do not confuse the entrance of **Bear Creek** to the southward with the mouth of the river. The river is navigable for about 8 miles above the mouth to Rodman Dam; this is the head of navigation, as the dam has no lock. The upper Oklawaha River and Rodman pool are reached from the St. Johns River through the Cross Florida Barge Canal. (See the preceding description of that waterway.)

(195) The depths and the speed of the downstream current in Oklawaha River below Rodman Dam are uncertain and will vary with the amount of water discharged from the dam's spillway. In 1983, it was reported that a depth of 4 feet could be taken to the dam. The river is extremely winding and is obstructed by shoals; snags and hyacinths may be encountered. State Route 19 fixed bridge crosses the river about 2.5 miles above the mouth with a clearance of 34 feet at low water stage.

(196) A ferry consisting of a tug and barge crosses St. Johns River 4.2 miles south of Welaka just below Mt. Royal. An overhead power cable with a clearance of 65 feet crosses the river at this point. Gasoline can be obtained at several fishing camps along the river between **Fort Gates,** about 5.3 miles south of Welaka, and Georgetown.

(197) **Georgetown** is a small town on the east bank of St. Johns River at the north end of Lake George, 8 miles south of Welaka. A ferry consisting of a tug and barge crosses the river between the town and **Drayton Island.** A marine railway that can handle craft up to 35 feet for hull and engine repairs is about 0.1 mile southeastward of the ferry landing. Fish camps at Georgetown have gasoline, water, ice, and limited marine supplies.

(198) **Lake George,** the first of the larger lakes on St. Johns River 75 miles south of Jacksonville, is about 10 miles long and 5.5 miles wide. The bottom is fairly uniform with depths of 8 to 12 feet in the center, shoaling rather abruptly near the shores. The improved channel, marked by a **347°** lighted range at the north end and a **166.8°** lighted range at the south end, lights, and daybeacons, cuts through the middle of the lake. In strong northerly and southerly winds the water becomes very rough. Small patches of hyacinth drift about the lake with the changing winds. Numerous old piling are found near the lake shore in 2 to 8 feet of water. The creeks emptying into the lake are shoal. A **naval bombing area** is in the eastern part of the lake. (See **334.520**, chapter 2, for limits and regulations.)

(199) In 1982, guide piles at the south end of Lake George between Lights 15 and 17 were reported in disrepair and extending into the channel.

(200) **Astor** is a small village 4.5 miles south of Zinder Point at the south end of Lake George. State Route 40 highway bridge, across the St. Johns River has a bascule span with a clearance of 20 feet; in the open position the draw overhangs the west side of the channel above a height of 72 feet. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, WXY 904. The nearby overhead power cable has a clearance of 50 feet. In 2008, the cable was reported to have sagged below its authorized clearance.

(201) There are good overnight accommodations here, on both sides of the river just south of the bridge. There are restaurants and motels with landings, and gasoline is pumped from several fuel piers. There are reported depths of 7 to 13 feet at the piers.

## Chart 11498

(202) The main channel of St. Johns River flows through the northwest portion of **Lake Dexter,** 92 miles south of Jacksonville. This very shallow lake is 3.7 miles long and about 0.9 mile in its widest part. In 1983, it was reported that a draft of 3 feet could be carried eastward through Lake Dexter, **Tick Island Creek**, **Lake Woodruff**, **Spring Garden Creek**, and the northern portion of **Spring Garden Lake** to **De Leon Springs.** The channel and aids to navigation are privately maintained. De Leon Springs is a privately owned tourist attraction and is one of the larger freshwater springs in Florida.

(203) On the St. Johns River 14.6 miles south of **Dexter Point,** at **Crows Bluff,** the river is crossed by State Route 44 highway bridge which has a bascule span with a clearance of 15 feet at the center. An overhead power cable with a clearance of 83 feet crosses the river 0.3 mile north of the bridge. A marina is on the east side of the river 0.2 mile north of the bridge; berths with electricity, water, ice, gasoline, launching ramp, hull and engine repairs, and a 20-ton mobile lift are available. On the east side of the river just north of the bridge, is a small park with boat basin, small piers, and launching ramp. In 1975, general depths of about 7 feet were reported in the basin. Water can be obtained at the park. Just south of the bridge, gasoline is available at a landing which had a reported depth of 4½ feet alongside in 1983.

(204) Several fishing resorts are between the bridge at Crows Bluff and Lake Beresford; berths, electricity, pump-out stations, gasoline, diesel fuel, water, ice, some marine supplies, and launching ramps are available, and hull and engine repairs can be made.

(205) **Lake Beresford** is a small lake, 2.2 miles long north and south and 0.5 mile wide, on the east side of the St. Johns River, 107 miles south of Jacksonville. A yacht club, fish camp, and boatyard are on the west side of the lake, and two fish camps are on the east side. Gasoline, water, and ice are available at the fish camps. The boatyard has a 32-foot marine railway, 4-ton marine lift, 32 berths with reported depths of 5 to 7 feet alongside, wet and covered storage, marine supplies, water, and electricity; hull and engine repairs can be made. **Beresford** is a small town and landing near the north end of the

lake. In 1983, the reported controlling depth was 3 feet to and alongside the dock of a fish camp at the town.

### Manatees

(206) A motorboat prohibited zone for the protection of manatees is in **Blue Springs Run,** and regulated speed zones are at its junction with St. Johns River, about 2 miles above Lake Beresford. (See Manatees, chapter 3.)

(207) **Wekiva River,** 115 miles south of Jacksonville, had a reported controlling depth of 3 feet in 1983 for a distance of about 3 miles above the mouth; above this point the river is little used and is obstructed by trees, logs, and hyacinth. The entrance is difficult to distinguish.

(208) The improved channel of St. Johns River enters **Lake Monroe** 120 miles south of Jacksonville. Near the west end of the lake the river is crossed by three bridges. The railroad bascule span and the U.S. Route 17 highway swing span have a minimum clearance of 7 feet. In 1993, a replacement fixed highway bridge was under construction for the Route 17 swing span. The overhead power cables below and above these bridges have a minimum clearance of 49 feet. On the north side of the river just east of the highway bridge is the small dredged basin of a State Park with reported depths of about 5 feet in 1980. Berths and launching ramps are available. The Interstate Route 4 fixed bridge, nearest the lake, has a clearance of 45 feet.

(209) **Enterprise** is a town on the north shore of Lake Monroe. A channel, marked by daybeacons, leads to the wharf of a powerplant west of the town. In 1984, the centerline controlling depth was 7½ feet.

(210) **Sanford,** 123 miles south of Jacksonville, is an important city and railroad center on the south side of Lake Monroe in the heart of the celery district. Commercial barge traffic consists of petroleum products from Jacksonville; there are three oil company receiving piers westward of the yacht harbor. The modern well-equipped yacht harbor has gasoline, diesel fuel (schedule ahead), water, ice, electricity, launching ramp, pump-out station, wet and dry storage, marine supplies, and a lift to 35 tons; engine and electronic repairs can be made. In 2004, the reported approach depth was 9 feet with 4 feet alongside. A large motel is adjacent to the harbor. Another small-craft facility available in the Sanford area is at a boatworks just off the St. Johns River about 3 miles eastward of the city; the facility is on the south bank of **Indian Mound Slough,** just northwestward of the highway bridge at 28°48'06"N., 81°12'49"W. In 2004, reported depths of 5.5 feet and 6.5 feet were available in the approach and alongside the berths, respectively. Gasoline, diesel fuel, water, electricity, marine supplies, and a pump-out station are available. Boats 75 feet long can use the docks and moorings; a marine railway can haul boats 60 feet long. Hull, engine and electronic repairs can be made; lift to 50 tons. A wharf 200 feet long provides covered storage for over 50 boats up to 60 feet in length.

### St. Johns River above Sanford

(211) The route from Lake Monroe to Lake Harney, a distance of 15 miles, is marked by numerous markers which have not been maintained since 1940. Navigation is not difficult except during periods of high water when the banks are flooded, at which time a local pilot should be taken.

(212) State Route 415 highway bridge crossing the St. Johns River, 3 miles east of Sanford, has a fixed span with a clearance of 25 feet. An overhead power cable at the bridge has a clearance of 69 feet.

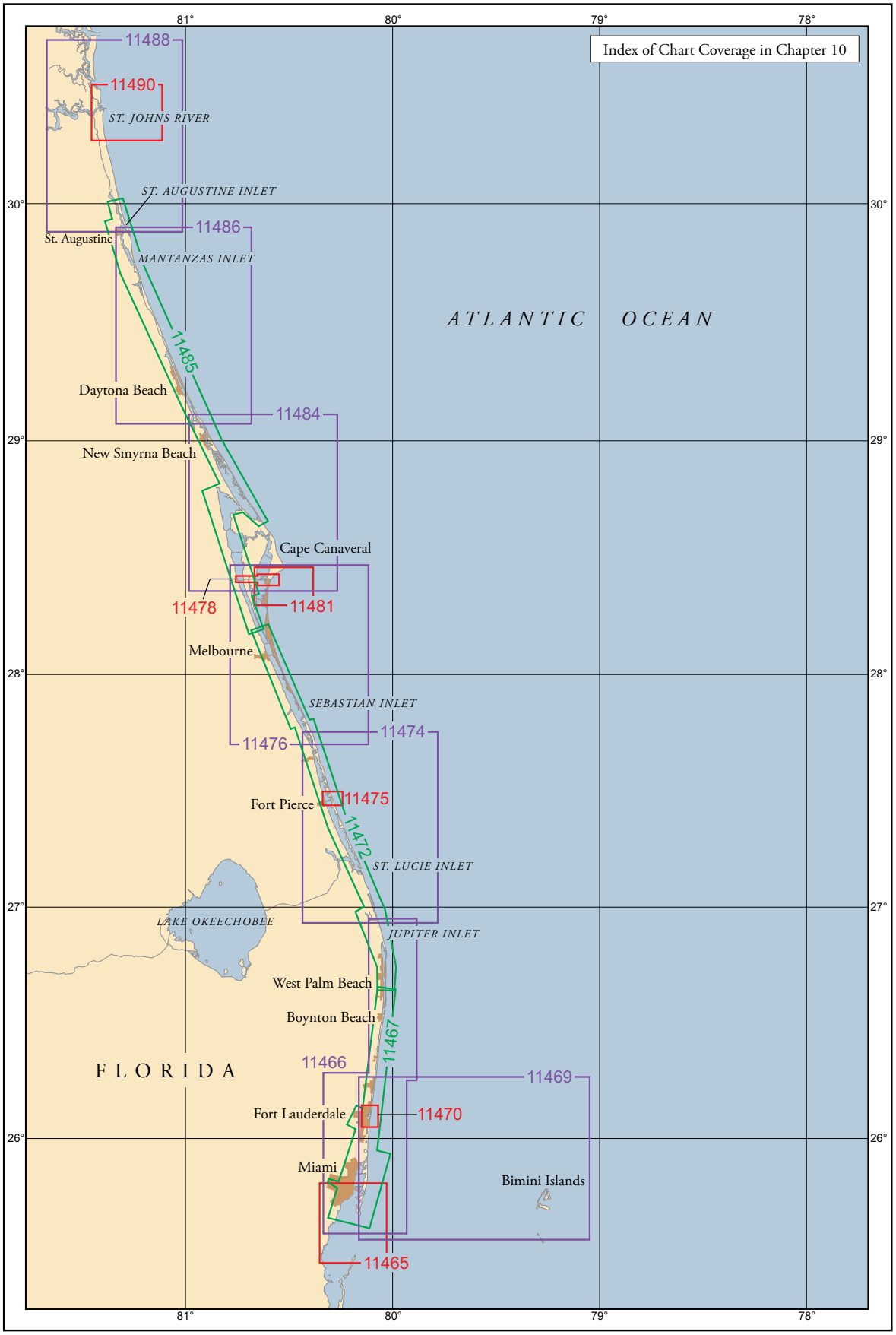
(213) At the entrance to **Lake Jessup,** 6 miles east of Sanford, State Route 46 highway bridge crosses the channel entering the lake. It has a 47-foot fixed span with a clearance of 14 feet. A section of the old bridge just downstream extends 45 feet from the west shore and is used as a fishing pier. Lake Jessup is about 8.5 miles long with a greatest width of 2.2 miles. It is very shallow at the entrance and little used. General depths in the lake are 6 to 8 feet. An overhead power cable, about 6.1 miles upriver from Lake Jessup to Lake Harney, crosses the river with a clearance of 65 feet.

(214) St. Johns River flows from **Lake Harney,** 140 miles south of Jacksonville. The lake is about 3.6 miles long with a greatest width of 2.2 miles. It is uniformly 6 to 7 feet deep except along the shores where it shoals. Boats do not generally go above the lake.

(215) Above Lake Harney the St. Johns River continues generally southward through Lake Poinsett, Winder, Washington, Sawgrass, and Hellen Blazes, then into St. Johns Marshes.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11490 | Atlantic Beach, ocean | 30°20'N/81°24'W | 5.7 | 5.4 | 0.2 |
| 11491 | Blount Island Bridge, St. Johns River | 30°25'N/81°33'W | 3.8 | 3.6 | 0.1 |
| 11491 | Dames Point, St. Johns River | 30°24'N/81°34'W | 3.4 | 3.3 | 0.1 |
| 11491 | Fulton, St. Johns River | 30°23'N/81°30'W | 4.0 | 3.8 | 0.1 |
| 11491 | Phoenix Park, St. Johns River | 30°23'N/81°38'W | 2.8 | 2.6 | 0.1 |
| 11491 | Jacksonville, Long Branch, St. Johns River | 30°22'N/81°37'W | 2.7 | 2.6 | 0.1 |
| 11491 | Ortega River entrance, St. Johns River | 30°17'N/81°42'W | 1.3 | 1.2 | 0.1 |
| 11491 | Piney Point, St. Johns River | 30°14'N/81°40'W | 1.0 | 0.9 | 0.1 |
| 11491 | Mayport (Bar Pilots Dock), St. Johns River | 30°24'N/81°26'W | 5.0 | 4.7 | 0.1 |
| 11491 | Mayport Naval Station, Water treatment Dock | 30°24'N/81°25'W | 5.2 | 4.9 | 0.1 |
| 11491 | Jacksonville, Main St Bridge, St. Johns River | 30°19'N/81°40'W | 1.9 | 1.9 | 0.1 |
| 11492 | Green Cove Springs, St. Johns River | 29°59'N/81°40'W | 0.9 | 0.8 | 0.0 |
| 11492 | Tocoi, St. Johns River | 29°52'N/81°33'W | 1.1 | 1.0 | 0.0 |
| 11492 | I-295 Bridge (west end), St. Johns River | 30°12'N/81°42'W | 1.0 | 1.0 | 0.1 |
| 11487 | Buffalo Bluff, St. Johns River | 29°36'N/81°41'W | 1.0 | 1.0 | 0.1 |
| 11487 | Palatka, St. Johns River | 29°39'N/81°38'W | 1.2 | 1.2 | 0.1 |
| 11487 | Sutherlands Still, Dunns Creek, St. Johns River | 29°34'N/81°36'W | 0.9 | 0.9 | 0.0 |
| 11487 | Welaka, St. Johns River | 29°29'N/81°41'W | 0.5 | 0.5 | 0.0 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011


Index of Chart Coverage in Chapter 10
81°
80°
79°
78°
30°
29°
28°
27°
26°
11488
11490
ST. JOHNS RIVER
ST. AUGUSTINE INLET
St. Augustine
11486
MANTANZAS INLET
ATLANTIC OCEAN
11485
Daytona Beach
11484
New Smyrna Beach
Cape Canaveral
11478
11481
Melbourne
SEBASTIAN INLET
11474
11476
Fort Pierce
11475
11472
ST. LUCIE INLET
LAKE OKEECHOBEE
JUPITER INLET
West Palm Beach
Boynton Beach
11467
FLORIDA
11466
11469
Fort Lauderdale
11470
Miami
Bimini Islands
11465

# St. Johns River to Miami

(1) This chapter describes the Florida coast southward from the St. Johns River (30°24'N., 81°24'W.) to Miami (25°46'N., 80°08'W.), and includes the deepwater ports at Port Canaveral, Fort Pierce, Port of Palm Beach, Port Everglades, and Miami. Information for offshore navigation is given first, followed by a detailed description of the coast, inlets, and seaports. The Intracoastal Waterway for this section of the coast is described in chapter 12.

### COLREGS Demarcation Lines

(2) The lines established for this part of the coast are described in **80.723 through 80.730**, chapter 2.

### Weather

(3) The most dangerous navigational weather hazards along this coast are tropical cyclones. While they can develop in any month, they are most likely from June through October. Mid-August through October is the peak season. There is about a 75 percent chance that at least one tropical cyclone will affect these waters each year; a 65 percent chance exists that it will be a hurricane. The frequency of landfalling tropical cyclones increases dramatically, south of Daytona Beach. On the average, Miami will experience hurricane force winds once in seven years, compared to once in 30 years at Daytona Beach and once in 50 years at Jacksonville. During the Fort Lauderdale hurricane of 1947, sustained winds reached 105 knots and gusted to 135 knots at Hillsboro Lighthouse, while Miami recorded 106-knot winds with 130-knot gusts in the October hurricane of 1950. Storm surges in severe hurricanes can reach 15 feet (4.6 m) or more above mean sea level. In deep water, waves of 30 to 40 feet (9 to 12 m) are possible. Early and late in the hurricane season, storms are often likely to approach the area from the western Caribbean either on a northerly or northeasterly heading. Midseason storms may either be recurving toward the north through northeast or moving west-northwestward.

(4) In general weather along this coast poses few problems for mariners. Gales are usually encountered less than 1 percent of the time with maximum winds reaching 35 to 50 knots from September through March. The easterly trade winds are common throughout much of the year with average speeds of 10 to 15 knots. Only infrequently will a severe cold front or winter storm affect these waters. These cold fronts bring large temperature drops and strong, gusty winds. Northwesterly and northerly winds are usually the strongest. Maximum waves of 18 to 25 feet (5.5 to 7.6 m) can be expected in deep waters from September through February while waves of more than 6 feet (1.8 m) occur 8 to 15 percent of the time from about October through March. Thunderstorms are most likely from May through October and may be associated with easterly waves or tropical cyclones. Tornadoes and waterspouts have been reported in all months; they are not usually as violent as the tornadoes of the mid-West.

## Chart 11480

(5) The coast from St. Johns River to Cape Canaveral trends south-southeastward for 125 miles. Three inlets, St. Augustine, Matanzas, and Ponce de Leon indent the coast. From St. Johns River to Ponce de Leon Inlet the coast is bold in appearance, with an almost continuous range of sand dunes backed by woods. The section southward of Ponce de Leon Inlet for 25 miles is formed by a very narrow strip of lowland lying between the sea, and Indian River North, and Mosquito Lagoon. From seaward this coast shows a lowline of sand dunes partially covered by grass and scrub trees with distant woods showing over them. The only natural object distinctive in appearance is Turtle Mound, a green hillock about 10 miles south of Ponce de Leon Inlet. When seen from northward and eastward, it is quite conspicuous but is less marked when viewed from other directions. The woods in the vicinity of Cape Canaveral are farther back from the beach and are less distinct when seen from seaward. Many landmarks are available along this stretch of the coast that may be used by southbound vessels proceeding close inshore to avoid the Gulf Stream.

(6) The depths from St. Johns River to Cape Canaveral are irregular. Depths of 5 to 7 fathoms are 1 mile offshore, while a depth of 3 fathoms is within 0.4 mile of the shore except off the entrances to St. Johns River, St. Augustine Inlet, Ponce de Leon Inlet, and from about 7 miles north of False Cape to Cape Canaveral.

(7) A **179°-359° measured nautical mile** is just southward of the entrance to St. Johns River; the markers are located northward and southward of St. Johns Light. A submerged instrument platform that extends about 6 feet off the bottom is 5.8 miles south of St. Johns river in about 30°18.1'N., 81°23.0'W. Shoal spots with depths of 33 to 38 feet over them are from 4 to 6 miles offshore and from 12 to 16 miles north-northeastward of St. Augustine Light. These shoals are about 8 miles long in a southeasterly direction and about 2.5 miles

wide. A swash channel with depths of 40 to 50 feet is inside these shoals and about 2 miles from the beach.

(8) Off Ponce de Leon Inlet 10 fathoms will be found within 2 miles of the beach. A wreck with 35 feet over it and shoals with a least depth of 35 feet are 5 to 7 miles north-northeastward of Ponce de Leon Inlet, and privately marked and unmarked fish havens extend 11 miles offshore northeastward and 13 miles offshore southeastward of the inlet. A dangerous sunken wreck is about 1.7 miles east-southeast of the inlet. Going southward the 10-fathom curve gradually works offshore to a distance of 10 miles off False Cape. From about 7 miles north of False Cape to Cape Canaveral there are dangerous shoals.

(9) **Northeastern reporting system/Southeastern reporting system** (See **33 CFR 169.105** and **169.115**, chapter 2, for limits.)

## Chart 11460

(10) From Cape Canaveral to Fort Pierce Inlet, the coast trends generally south-southeastward for 62 miles and is broken only by Sebastian Inlet. The inlet is a narrow dredged channel, not distinguishable from any distance offshore except by the highway bridge across the inlet and by the sand spoil bank on the north side which is bare and a little higher than other sand dunes in the vicinity. This section of the coast is formed almost entirely by a low, narrow strip of sand, covered with vegetation, which lies at a distance of 1 to 2 miles from the mainland, from which it is separated by the shallow waters of Banana and Indian Rivers, a part of the Intracoastal Waterway. From seaward the coast shows a line of sand dunes partly covered with grass and scrub palmetto. At several places buildings show prominently from seaward. In the background the heavy woods on the mainland may be seen. Shoals extend 10 miles offshore with a least depth of 23 feet about 2.5 miles north-northwestward of Bethel Shoal Lighted Buoy 10, which is about 47 miles south-southeastward of Cape Canaveral Light.

(11) A **coral habitat area of particular concern (HAPC)** is centered about 22 miles, 055° from the entrance to Fort Pierce Inlet.

(12) From Fort Pierce Inlet to Lake Worth Inlet, the coast trends generally south-southeastward for 43 miles and is broken by St. Lucie and Jupiter Inlets. This section of the coast is formed by a low, narrow strip of sand, covered with vegetation, and separated from the mainland by the shallow waters of Indian River and by the Intracoastal Waterway connection between the Indian River and Lake Worth. From seaward the coast shows a line of sand dunes partly covered with grass and scrub palmetto. In the background the heavy woods on the mainland may be seen. Buildings show prominently from seaward.

(13) From Lake Worth Inlet the general trend of the coast is south for 60 miles to the Miami Harbor entrance. The coastline is broken by Port Everglades, several unimportant inlets, Bakers Haulover Inlet, and the entrance to Miami Harbor. It is formed almost entirely by a low sand beach covered with grass and scrub palmetto, back of which it is wooded. Conspicuous from seaward are the buildings and piers at Palm Beach, Hillsboro Inlet Entrance Light, and the large buildings and tanks along the beach from Palm Beach southward, especially at Fort Lauderdale, Hollywood, Miami Beach, and Miami.

(14) This section of the coast is also fairly bold, and the 20-fathom curve runs parallel to the beach at a distance of about 2 miles until in the vicinity of the Miami Harbor entrance where the curve of the shore becomes south-southwestward and the 20-fathom curve is about 4 miles offshore. Between Port Everglades and the Miami Harbor entrance shoaling is rapid, depths of 6 to 8 fathoms being found in places 1.5 miles from the beach.

## Chart 11488

(15) The coast between St. Johns River and St. Augustine Inlet is straight with the 5-fathom curve about 0.5 mile offshore except at the entrances. Offshore shoals along this route have been described previously.

(16) The first 10 miles south of St. Johns River are marked by the water tanks and multistoried buildings at most of the beach resorts. The buildings, amusement park, and pier at **Jacksonville Beach**, and the spherical elevated water tank at **Ponte Verda Beach**, about 6.5 miles and 9 miles southward of the river entrance, respectively, are very prominent. Otherwise the coast is unmarked except for St. Johns Light and St. Augustine Light.

## Charts 11488, 11485

(17) **St. Augustine Inlet** is 30 miles south of the St. Johns River entrance. **St. Augustine,** the oldest city in the United States and a popular winter resort with several fine hotels, is 2 miles inside the entrance.

### Prominent features

(18) **St. Augustine Light** (29°53'08"N., 81°17'19"W.), 161 feet above the water, is shown from a conical tower with a black and white spirally banded shaft on the north end of **Anastasia Island,** 1.5 miles south of the entrance to St. Augustine Inlet.

(19) Other prominent features are an elevated water tank about 200 yards southeast of the light, the towers of the Vilano Beach (State Route A1A) lift bridge on the Tolomato River, a radio tower 1.3 miles southward of the light, the lighted cross and the radio tower in the northern part of the city, and a cupola on the south end

of a large building in the city. **Castillo de San Marcos** may be seen after entering the inlet.

### Channels

(20) The entrance channel to St. Augustine Inlet is subject to frequent change in depth and direction due to current and storm action; it is protected by a partial groin on the north side and by a jetty on the south side. Dangerous and shifting shoals extend 1 mile seaward. A lighted whistle buoy marks the approach, and buoys mark the channel. These aids are not charted since they are moved frequently with changing conditions to mark the best water. Mariners are advised to seek local knowledge prior to entering.

### Anchorages

(21) There is good anchorage in the Matanzas River at St. Augustine both below and above the bridge. This anchorage, however, is not used as a harbor refuge because during strong northeasterly and northwesterly winds the sea makes the bar impassable even for small vessels. A more protected anchorage in depths of 20 feet, hard sand bottom, is reported in **Salt Run,** close south-southeastward of St. Augustine Inlet. About 8 feet can be taken to this anchorage. The mariner should favor the eastern shore for the best water and lee. Private buoys mark the channel into Salt Run.

### Routes

(22) The shore should be given a berth of at least 2 miles when approaching St. Augustine Inlet in order to stay outside of the outer sea buoy. No strangers should attempt to enter without a pilot as the channel shifts frequently.

### Weather, St. Augustine and vicinity

(23) While this area lies within the northern portion of the trades, local effects often determine the winds. In general there is a northerly component in winter and a southerly one in summer. The onshore trades are often reinforced by the local sea breeze, which results in strongest winds blowing during the afternoon. From May through September, winds of 17 knots or more occur about 1 to 5 percent of the time compared to 5 to 10 percent for the remainder of the year. These winter winds are also more variable due to occasional frontal passages and low pressure systems. Nighttime winds are usually the lightest. While damaging tropical cyclones are infrequent, less severe storms can still dump 8 to 10 inches (203 to 254 mm) of rain in this area. One of the worst storms to hit this area was hurricane Dora in 1964. Winds at St. Augustine were estimated at about 110 knots while a 12-foot (4 m) tide swept over Anastasia Island.

(24) The moderating influence of the ocean on maximum summer temperatures and minimum winter temperatures is pronounced along the coast but diminishes a few miles inland. Temperatures reach 90° (32.2°C) or higher at the beach on only a little more than one-half as many days as in the city. The rainy season runs from mid-June through mid-October when about one-half of the 52-inch (1,320 mm) annual average is recorded. During the summer, rain usually falls as afternoon and early evening thundershowers, which also help cool things off.

### Pilots

(25) All vessels including yachts not having local knowledge of the channel are advised to take a local pilot both entering and leaving the inlet. Pilots are available by prior arrangement with the dockmaster at the city yacht pier. At least 24 hours advance notice of time of arrival is requested.

### Harbor regulations

(26) A dockmaster controls moorage at the city yacht pier. The city has a **harbormaster,** who can be contacted through the dockmaster or by telephone (904-829-3966).

### Small-craft facilities

(27) A number of small private landings are on the east side of the city, north and south of the bridge. The city yacht pier is about 100 yards south of Route A1A highway bascule bridge which crosses the Matanzas River opposite the center of the city. Berths with electricity, gasoline, diesel fuel, water, ice, pump-out station and marine supplies are available. In 2006, the reported alongside depth was 12 feet.

(28) A privately marked channel with a reported controlling depth of 5½ feet in 2002 leads to a marina on the west side of Salt Run. Berths with electricity, gasoline, diesel fuel, water, ice, marine supplies and wet storage are available. Engine and electronic repairs can be made.

(29) Marine railways to 90 feet and complete repair facilities are available at several boatyards and marinas in San Sebastian River.

(30) The Intracoastal Waterway enters the St. Augustine Inlet from the north through Tolomato River and continues southward through Matanzas River. Clearance of the Bridge of Lions (Route A1A) crossing the Matanzas River at St. Augustine is given in chapter 12.

(31) **San Sebastian River** flows past the west side of the city of St. Augustine and empties into the Matanzas River 1.4 miles south of the Route A1A highway bridge. In 1996, the controlling depth in the channel, marked by daybeacons, was 6 feet (8 feet at midchannel) to Kings Street Bridge. In stormy southeasterly weather small boats may find a good haven in the river. The overhead power cable crossing the river about 300 yards south of the Kings Street Bridge has a clearance of 66 feet.

(32) An extensive shrimp industry is conducted along the wharves in the upper part of the river, being supplied by seagoing shrimp boats during the shrimp season.

Several small shipyards and shrimp boatbuilding yards are along the river. Shrimp boats up to 150 feet long can be handled for general repairs. Supplies and fuel may be obtained at the wharves.

## Chart 11486

(33) From St. Augustine Inlet to Ponce de Leon Inlet the coast continues straight, broken only by Matanzas Inlet. The 5-fathom curve is within 0.5 mile of the shore except off St. Augustine Inlet and Matanzas Inlet. Numerous marked and unmarked fish havens are as much as 18 miles offshore.

(34) An **oceanic spring** is 8.2 miles southeastward of St. Augustine Light and 2.4 miles east of **Crescent Beach**. The location of the spring can be easily detected by the appearance of the water; noticeable swirls, similar to those in a swiftly running stream, can be seen at a distance of about a mile. At times, especially in rough weather, there is a marked disturbance of the water and yellowish color trails off to the northeastward. In choppy weather, a slick is the most noticeable feature. In fact, it has all the appearances of a shoal or reef.

(35) A closer view shows a slick swirl with a slight overfall, the center of the swirl moving about 100 feet, first to the eastward and then to the westward, and a noticeable streak of current to the northeastward. The swirls and overfalls vary rapidly in intensity, as though large bubbles or intermittent volumes of water were being emitted. A boat will be thrown out of the swirl so that it is difficult to hold it in position.

(36) A strong odor, quite similar to the smell of water from the various sulfur springs of Florida, is noticeable, and under favorable circumstances can easily be detected 2 miles away.

(37) **Matanzas Inlet** (see chart 11485) is 11 miles southward of St. Augustine Light. It affords an outlet for Matanzas River, which extends northward to St. Augustine and southward, following the coast for a distance of 8 or 10 miles to **Graham Swamp.** The inlet is obstructed by a shifting bar, and breakers extend across the entire entrance in normal weather. However, in 1983, it was reported that with local knowledge about 3 feet could be carried through the entrance. The Intracoastal Waterway passes through a land cut of the Matanzas River just inside the entrance.

(38) State Route A1A highway bridge across the inlet has a 41-foot fixed span with a clearance of 10 feet. An overhead power cable crossing on the west side of the bridge has a clearance of 32 feet. **Fort Matanzas National Monument** is about 1 mile northwestward of the inlet.

(39) At **Marineland,** 13.6 miles southward of St. Augustine Light, is a conspicuous building housing an oceanarium.

(40) **Flagler Beach** is 26.5 miles southward of St. Augustine Light. The microwave tower and ocean pier are good landmarks. The T-shaped pier extending offshore is 650 feet long and 20 feet wide.

(41) **Daytona Beach** is a popular winter resort about 42 miles southward of St. Augustine Light. The buildings, water tanks, and radio towers are visible from seaward. The large recreation pier on the oceanfront is a prominent landmark for passing vessels.

(42) See Daytona Beach, chapter 12.

## Chart 11484

(43) From Ponce de Leon Inlet to False Cape the coast is straight. The 5-fathom curve is about 0.5 mile offshore for a distance of 24 miles. Beyond this distance dangerous shoals, wrecks, and numerous fish havens will be found up to 15 miles offshore.

(44) **Ponce de Leon Inlet** (see chart 11485) is 53 miles southward of St. Augustine Light and 41 miles northwestward of Cape Canaveral Light. It is used by both recreational and small commercial vessels bound for New Smyrna Beach or Daytona Beach, as well as others entering for an anchorage.

(45) **Ponce de Leon Inlet Light** (29°04'50"N., 80°55'41"W.), 159 feet above the water, is shown from a red brick conical tower on the north side of the inlet.

(46) The inlet, protected at the entrance by jetties, is entered through a channel that leads over a bar and through the jetties. The outer end of the north jetty is marked by a light, and the inner end of the jetty is awash. In 2010, the controlling depth through the inlet was 14 feet. Safe navigation may also be hampered by numerous recreational fishing vessels that anchor inside the north jetty. Local knowledge and extreme caution is advised.

### Currents

(47) The current through the inlet is strong. It is reported that the average ebb is 3 knots, however, this can increase to 5 or 6 knots with southeasterly winds. High water occurs about the same time as at Mayport.

(48) Inside the inlet, three channels lead to the Intracoastal Waterway; northward through Halifax River, westward through **Rockhouse Creek,** and southeastward through Indian River North. The channels through Halifax River and Indian River North are marked by buoys. In 2010, the midchannel controlling depth was 5 feet; thence in 1986, the midchannel controlling depth in Rockhouse Creek was 7 feet; thence in 2010, the controlling depth was 9 feet to the Intracoastal Waterway by way of Indian River North.

(49) **Ponce de Leon Inlet Coast Guard Station** is on the south side of the entrance to Ponce de Leon Inlet. Supply and repair facilities inside the inlet are described in chapter 12.

(50) The Intracoastal Waterway is just inside the entrance to Ponce de Leon Inlet, passing through Halifax

River from the north and Indian River North from the south.

(51) About 10 miles southward of Ponce de Leon Inlet is **Turtle Mound,** a prominent hill 50 feet high. It is under the protection of the Florida State Historical Society. The original Indian name was **Mount of Surruque**. It was charted on Florida maps in 1564. Spanish galleons stopped here for repairs, wood, and water.

(52) **Eldora** is a fishing camp 11.5 miles southward of Ponce de Leon Inlet.

(53) **False Cape,** about 7.5 miles northward of Cape Canaveral Light, is the name given to a small part of the coast which it resembles when seen from seaward.

(54) The **John F. Kennedy Space Center** and the **Cape Canaveral Air Force Station** occupy most of **Canaveral Peninsula** and **Merritt Island,** the large land areas between the ocean and the Banana and Indian Rivers, from Mosquito Lagoon on the north to Port Canaveral on the south. The huge Vehicle Assembly Building at the center, said to be one of the world's largest buildings, is visible far from shore. When closer in, other buildings and the mobile service towers at the cape are also conspicuous from all directions.

(55) A **restricted area** has been established in the navigable waters contiguous to the area offshore of the John F. Kennedy Space Center. (See **334.525**, chapter 2, for limits and regulations.)

(56) Trawlers or other vessels should exercise caution while dragging the ocean floor within a 40-mile radius of Cape Canaveral because missile debris containing unexploded ordnance exists in the area.

(57) Ordnance disposal personnel occasionally detonate explosives on the beaches in the vicinity of the cape.

(58) **Cape Canaveral,** where the coast makes a sharp bend westward, is low and sandy. The shore in the vicinity of the cape is constantly moving eastward. **Cape Canaveral Light** (28°27'37"N., 80°32'36"W.), 137 feet above the water, is shown from a white and black horizontally banded conical tower 1 mile inshore from the cape.

(59) A **Security Zone** has been established to include certain land and water areas at Port Canaveral and adjacent areas at Kennedy Space Center and Cape Canaveral Air Force Station. (See **165.1 through 165.7, 165.30, 165.33, 165.701, and 165.705**, chapter 2, for limits and regulations.) During certain operations the Security Zone may be temporarily expanded. (See Local Notice to Mariners.)

(60) Shoals extend 13 miles north and northeast from Cape Canaveral; mariners should use care when in the vicinity of the shoals. The outer shoals consisting of **Hetzel Shoal**, **Ohio Shoal**, and **The Bull** have a least depth of 11 feet. The inner shoals consisting of **Chester Shoal** and **Southeast Shoal** have depths of 2 to 18 feet. A lighted whistle buoy is 2.5 miles northeast of Hetzel Shoal. A lighted buoy is off the southeast end and along the south side of Southeast Shoal. In a heavy sea the shoals are marked by breakers, but with a smooth sea there is nothing to indicate them except their relative positions to Cape Canaveral Light and the lighted buoys. Only small light-draft vessels in calm seas should pass inside the outer shoals.

(61) Several wrecks are east of Cape Canaveral within 13 miles of the shore. They have been cleared by a wire drag to a least depth of 43 feet. An unmarked sunken wreck is north of Ohio Shoal in about 28°39.7'N., 80°23.3'W.

(62) The effect of the Gulf Stream may be expected well in on the shoals, and this should be kept in mind in approaching the cape from the south. In approaching the cape, stay in at least 15 fathoms from the south and at least 13 fathoms from the north to avoid the shoals.

(63) A **danger zone** for missile testing extends 3 miles offshore from False Cape to the entrance to Port Canaveral. (See **334.590**, chapter 2, for limits and regulations.) **Canaveral Bight**, on the south side of the cape, is in the danger zone.

(64) **Canaveral National Seashore**, a Marine Protected Area (MPA), is about 0.5 mile offshore extending from the JFK Space Center northward to Bethune Beach including the Intracoastal Waterway along this area.

## Charts 11478, 11481

(65) **Port Canaveral (Canaveral Harbor)** is 4 miles southwest of Cape Canaveral Light and 150 miles south of the entrance to the St. Johns River. The city of **Cape Canaveral** is just southward of the port. The principal commodities handled in the harbor are petroleum products, cement, asphalt, salt, general cargo, citrus products, and newsprint. Commercial party fishing vessels, cruise ships, and many pleasure crafts operate from the port.

### COLREGS Demarcation Lines

(66) The lines established for Port Canaveral are described in **80.727**, chapter 2.

### Channels

(67) A U.S. Navy project for Port Canaveral provides for an entrance channel 44 feet deep to East Basin, thence 41 feet in East Basin. A Federal project provides for a channel 40 feet deep from East Basin to Middle Basin, thence 35 feet deep in Middle Basin, thence 31 feet deep from Middle Basin to West Basin, and thence 31 feet in West Basin. The harbor is maintained at or near project depths. (See Notice to Mariners and latest edition of chart for controlling depths.) The entrance to the harbor is protected by jetties. The approach channel is marked by white **310°** lighted range and lighted buoys; the entrance channel between the jetties is marked by a green **270°** lighted range, lights and lighted buoys. The entrance to East Basin is marked by a red **325°30'** lighted range. Canaveral Barge Canal leads westward to Banana River and the Intracoastal Waterway from

the western end of the harbor just west of West Basin entrance. (See also chart 11484 and chapter 12.)

### Caution

(68) The National Marine Fisheries Service has advised that the sea turtles and manatees which inhabit the Port Canaveral area are considered to be threatened and endangered species. In order to protect these turtles and manatees, its is requested that excursions from the centerline of the approach and entrance channels be held to a minimum.

### North Atlantic Right Whales

(69) Approaches to Port Canaveral lie within designated critical habitat for endangered North Atlantic right whales (See **50 CFR 226.203(c)**, chapter 2). The area is a calving ground from generally November 15 through April 15. It is illegal to approach right whales closer than 500 yards. (See **50 CFR 224.103(c)**, chapter 2 for limits, regulations, and exceptions.) Special precautions may be needed to protect and avoid these animals. (See North Atlantic right whales, indexed as such, chapter 3.)

(70) Small craft should stay clear of large vessels entering, leaving, or maneuvering in the harbor.

### Dangers

(71) The Navy pier on the east side of Middle Basin is within a **restricted area**, and East Basin is within a **danger zone**. (See **334.530 and 334.600**, chapter 2, respectively, for limits and regulations.) All areas north of the harbor channel are within defined Security Zones A and B. (See **165.705**, chapter 2, for limits and regulations.)

### Weather, Port Canaveral and vicinity

(72) Tropical cyclones are a threat from about June through November. There are roughly four peak periods within this season. A slight maximum occurs in early June while more defined peaks occur in early August, early September and mid-October. The probability of at least one occurrence of gales from a tropical cyclone in 1 year is about 36 percent while the chance of two occurrences drops to 6 percent.

(73) Windspeeds of 17 knots or more are most likely from October through April when they occur 3 to 7 percent of the time at Cape Canaveral and 10 to 17 percent of the time at Patrick Air Force Base, about 13 miles south of the port. Thunderstorms are observed on about 70 days annually with a peak of 10 to 15 days per month from June through September. These are most likely during the late afternoon and early evening. Visibility is generally good, outside of showers. However, in December, January, and February, visibility drops below 0.5 mile (0.9 km) on about 2 to 4 days per month; they usually improve by midmorning. Temperatures only reach 90°F (32.2°C) or more on about 16 to 18 days annually but climb into the 80's (27.2° to 32.2°C) range on a little less than 200 days each year. Freezing temperatures are recorded just once or twice per year, on the average.

### Pilotage, Port Canaveral

(74) A State pilot is compulsory for all foreign flag vessels and all U.S. vessels under registry with a draft of 7 feet or greater. Certain U.S. vessels under enrollment are required to carry a federal pilot. A state pilot is required for all vessels over 500 gross tons docking or undocking at Canaveral Port Authority docks, unless specifically exempted by the Port Director. Pilotage for U.S. and foreign naval vessels is provided in accordance with an agreement between the U.S. Navy and the Canaveral Pilots Association. All Canaveral Pilots Association pilots are fully licensed by the state and federal governments.

(75) Canaveral Pilots Association office is in a white mobile home at 9060 Herring Street, Port Canaveral, Florida. The mailing address is: P.O. Box 0816, Cape Canaveral, Florida 32920-0816; telephone 321-783-4645 (office and residences), FAX 321-783-6268 (office only). The office monitors VHF-FM radiotelephone channel 12. Pilot service is available to all vessels. Canaveral Pilots Association serves the channels and basins of Port Canaveral; the pilots also dock and undock vessels.

(76) The Canaveral Pilots Association has two pilot boats, PILOT 1 and PILOT 2, both 40 feet long with a black hull and white superstructure and the word PILOT on the side. The pilot boats display a white light over a red light at night and the International Code flag HOTEL by day. Pilots board about 1 mile southeast of Canaveral Harbor Approach Channel Lighted Buoy 3 (28°22'32"N., 80°31'48"W.) unless special arrangement for boarding elsewhere has been made. Vessels should maintain a speed of about 6 to 8 knots and provide a pilot ladder about 1 meter above the water.

(77) Arriving vessels should advise the Port Authority, telephone 321-783-7831, and the pilots if they are close to or at the maximum allowable draft and/or if they have any defects or special needs. Port Authority will assign berths and provide line handlers. Pilots will arrange for tug services.

(78) Request for pilot service by FAX is discouraged, as the pilot station is not staffed 24 hours daily. Arrangements can be made by telephone directly or through the Canaveral Port Authority. A 24 hours ETA notice is requested. When working, pilots use VHF-FM channel 12, and the boats monitor channels 12 and 16.

(79) Reduced visibility affects pilot service. Operational guidelines (not in this text) established pursuant to Florida law and in conjunction with marine interests in the port state that vessels are not to maneuver on the channels and basins of the port if visibility is less than 0.5 nautical mile.

(80) The Canaveral Pilots Association participates in the North Atlantic right whale Early Warning System. (See North Atlantic right whales, indexed as such, chapter 3.)

### Towage

(81) Three conventional tugs, two 2,000 hp and one 2,150 hp, and one tractor tug 3,600 hp are available at the port. All tugs monitor VHF-FM channels 12 and 16.

### Quarantine, customs, immigration, and agricultural quarantine

(82) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(83) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(84) Port Canaveral is a **customs port of entry.**

(85) **Port Canaveral Coast Guard Station** is at the northeast corner of West Basin.

### Harbor regulations

(86) The Canaveral Port Authority has jurisdiction and control over port areas and facilities not under the control of the federal government. Vessels are ranked for movement priority. Emergency movements are first priority. Naval vessels engaged in demonstration and shakedown operations and regularly calling cruise ships have second priority. Generally all other vessels move on a first come, first served basis. Port regulations are contained in the Port Authority tariff. In addition, Operational Guidelines for the port have been promulgated by the Port Authority in consultation with the U.S. Coast Guard, U.S. Navy, U.S. Army Corps of Engineers, other interested parties and the pilots. Copies of both publications are available from Canaveral Port Authority, P.O. Box 267, Cape Canaveral, Florida 32920-0267; see pilotage (previously mentioned) for telephone number. The Port Authority enforces regulations and assigns berths.

(87) **Radio transmissions are not allowed during missile launchings.**

### Wharves

(88) Port Canaveral has commercial berths owned by the Port Authority. Middle and West Basins are used by commercial vessels as well as at the north and south sides of the Inner Reach; cruise ships usually berth in the West Basin. Canaveral Port Authority maintains an internet website at http://www.portcanaveral.org. This internet site provides descriptions of port facilities and maximum allowable drafts. Pilots also provide information on allowable drafts. Information about facilities is also published in the U.S. Army Corps of Engineers Port Series No. 16 (See Appendix A for address.)

(89) **Facilities on the south side of Inner Reach:**

(90) **Canaveral Port Authority, Cruise Terminals Nos. 2 and 3 Wharf** (28°24'33"N., 80°36'00"W.): 1,403-foot face; 31.5 to 33 feet alongside; deck height, 10.5 feet; mooring cruise vessels; boarding passengers; owned and operated by Canaveral Port Authority.

(91) **Canaveral Port Authority, Cruise Terminals No. 4** (28°24'33"N., 80°35'46"W.): 750-foot face; 31.5 to 33 feet alongside; deck height, 10.5 feet; mooring cruise vessels; boarding passengers; owned and operated by Canaveral Port Authority. (Cruise Terminals 2, 3 and 4 form a continuous berth, 2,153 feet long.)

(92) **Canaveral Port Authority, South Cargo Piers 1, 2, and 3** (28°24'36"N., 80°36'20"W.): 1,615-foot face; 34 feet alongside; deck height, 10 feet; 108,000 square feet covered storage; 26 acres open storage; 2.5 million cubic feet cold storage; pipelines extend to storage tanks, 257,000-barrel capacity; roll-on/roll-off ramp at the east end of Pier 1; receipt and shipment of general cargo; receipt and shipment of petroleum products at Pier 3; receipt of paper products, asphalt; shipment of perishable food commodities; bunkering vessels; mooring pilot boats; owned by Canaveral Port Authority and operated by Canaveral Port Authority; Coastal Fuels Marketing, Inc.; and Mid-Florida Warehouses, Ltd.

(93) **Canaveral Port Authority, Tanker Berth No. 1** (28°24'34"N., 80°36'32"W.): 45-foot face; 340 feet of berthing space with dolphins; 36 to 38 feet alongside; deck height, 10 feet; storage silo for 32,000 tons of cement; pipelines extend from wharf to storage tanks, 257,000-barrel capacity; receipt of petroleum products; asphalt, and cement; bunkering vessels; owned by Canaveral Port Authority and operated by Coastal Fuels Marketing, Inc.; Transtate Industrial Pipeline Systems, Inc.; and Continental Cement of Florida, Inc.

(94) **Canaveral Port Authority, Tanker Berth No. 2** (28°24'34"N., 80°36'37"W.): 65-foot face; 340 feet of berthing space with dolphins; 38 feet alongside; deck height, 10 feet; pipelines extend from wharf to storage tanks, 250,000-barrel capacity; receipt and shipment of No. 6 fuel oil; owned by Canaveral Port Authority and operated by Transtate Industrial Pipeline Systems, Inc., and Exceltech Corp.

(95) **Canaveral Port Authority, South Cargo Pier 4** (28°24'32"N., 80°36'40"W.): 400-foot face; 400 feet of berthing space; 38 feet alongside; deck height, 10 feet; open storage area at rear for about 25,000 tons of salt; receipt and shipment of general cargo; receipt of salt and paper products; shipment of perishable food commodities; owned by Canaveral Port Authority and operated by Canaveral Port Authority; Mid-Florida Freezer Warehouses, Ltd., and Cargill, Inc., Salt Division. (Tanker Berths 1 and 2, and South Cargo Piers 4 and 5 form a continuous berth, 1,247 feet long.)

(96) **Facilities on the north side of Inner Reach:**

(97) **Canaveral Port Authority, North Cargo Piers 1 and 2** (28°24'45"N., 80°36'43"W.): 1,260-foot face; 1,350 feet of berthing space with dolphins; 38 feet alongside; deck height, 10 feet; crawler cranes to 165 tons; roll-on/roll-off ramp at north end; receipt of containerized and roll-on/roll-off general cargo; receipt of salt; owned by Canaveral Port Authority and operated by Canaveral Port Authority; Morton International, Inc., and Mid-Florida Freezer Warehouses, Ltd.

(98) **Canaveral Port Authority, North Cargo Pier 3** (28°24'39"N., 80°36'47"W.): 400-foot face; 400 feet of berthing space; 32 feet alongside; deck height, 10 feet;

600,000 square feet covered storage; receipt and shipment of general cargo; mooring vessels; owned and operated by Canaveral Port Authority.

(99) **CSR Rinker Materials Corp., Port Canaveral, North Cargo Pier 4** (28°24'39"N., 80°36'56"W.): 400-foot face; 400 feet of berthing space; 34 feet alongside; deck height, 10 feet; one traveling gantry ship unloader, 400 tons per hour rate; silos, 42,000 ton capacity; receipt of cement; mooring vessels; owned by Canaveral Port Authority and operated by CSR Rinker Materials Corp.

(100) **Canaveral Port Authority, Cruise Terminal 5** (northwest corner of West Basin): 565 feet of berthing space; 35 feet alongside; 59,000 square feet embarkation and baggage facility; mooring cruise vessels; boarding passengers; owned and operated by Port Canaveral Authority.

(101) **Canaveral Port Authority, Cruise Terminal 8** (south of Cruise Terminal 5): 800 feet of berthing space; 35 feet alongside; 70,000 square feet embarkation and baggage facility; mooring cruise vessels; boarding passengers; owned and operated by Port Canaveral Authority.

(102) **Canaveral Port Authority, Cruise Terminal 10** (south of Cruise Terminal 8): 724 feet of berthing space; 33.5 feet alongside; 75,000 square feet embarkation and baggage facility; mooring cruise vessels; boarding passengers; owned and operated by Port Canaveral Authority.

### Communications

(103) Good State highways connect to U.S. Route 1 and Interstate 95. The Florida East Coast Railway cargo facility, on the mainland, is 10 miles from the port.

## Chart 11476

(104) From southward of the shoals at Cape Canaveral to Bethel Shoal, a distance of about 43 miles, the shore is straight. The 5-fathom curve is from 0.3 to 1 mile offshore along this section of the coast.

(105) A large water tank is prominent about 4.5 miles southward of **Cocoa Beach**, and 13 miles southward of Cape Canaveral Light. **Indian Harbor Beach** is marked by a water tank. **Indialantic** is marked by prominent water tanks.

(106) **Sebastian Inlet** (see chart 11472) is 36.5 miles southward of Cape Canaveral Light. In 1983, there was a reported controlling depth of 5 feet from the Intracoastal Waterway through the dredged channel of the inside bar, thence 8 feet to the eastern entrance. In 1983, it was reported that 12 feet can be taken across the bar in smooth seas. The western entrance is marked by private buoys and a light. The entrance is protected by a north jetty, marked by a private light, extending 600 feet from shore and a south jetty extending 500 feet from shore. A steel bulkhead leads in a west-northwest direction for about 1,500 yards from the south side of the inlet into Indian River. The inlet is used by local fishermen and party boats.

(107) Sebastian Inlet is dangerous and particularly hazardous to small boats not designed for the open seas. Persons using this inlet should be experienced boatmen and have local knowledge. It is reported that shoaling exists just north of the south jetty and for about 200 yards to the east of the south jetty. Shoaling also exists in the general area south of the small spoil island between the bridge and the Intracoastal Waterway. Shoals are gradually building up and shifting. Minimum depth in the inlet varies; the bottom is rocky in spots.

(108) It is further reported that the velocity of the tidal currents reaches 10 knots, and turbulence exists between the bridge and the end of the jetties. Anchoring east of the bridge is extremely hazardous, particularly by the stern. Except during flat calms, breaking and confused seas exist off the mouth of the inlet and inside the inlet as far as the bridge. Conditions worsen with increasing seas or winds and on an ebb tide. Small boats departing the inlet on a flood or slack tide can find it impossible to return on an ebb tide. While the inlet conditions are generally worse during the winter months, hazardous conditions develop rapidly in the summer in squalls and on ebb tides.

(109) Additional information on local existing conditions can be obtained by contacting the Fort Pierce Coast Guard Station (telephone: 772-464-6100) and asking for the Coast Guard Auxiliary telephone number. A fixed highway bridge, State Route A1A, crossing the inlet has a clearance of 37 feet.

(110) **Thomas Shoal**, with a least depth of 26 feet over it, is 7 miles eastward of Sebastian Inlet. **Bethel Shoal**, with depths of 29 to 30 feet over it, is 17 miles southeastward of the inlet and 11 miles offshore. A lighted buoy is northeast of the shoal area. A 23-foot shoal spot is about 2.5 miles north-northwestward of the buoy.

## Chart 11474

(111) From Bethel Shoal to Jupiter Inlet, a distance of about 50 miles, shoal areas and wrecks are over 10 miles offshore.

(112) The twin towers at **Riomar,** 12 miles northward of Fort Pierce Inlet are prominent.

(113) **Indian River Shoal**, with depths of 10 to 30 feet over it, is about 8 miles northward of Fort Pierce Inlet and extends for about 3 miles offshore.

## Chart 11475

(114) **Fort Pierce Inlet** is 62 miles southward of Cape Canaveral Light and 33 miles northward of Jupiter Inlet Light. Care must be exercised in entering due to the strong currents. In southeasterly weather with an ebb tidal current the entrance is rough.

(115) **Fort Pierce,** on the west shore of the Indian River inside Fort Pierce Inlet, is the St. Lucie County Seat. The principal commodities received in the port are general cargo and citrus from the Bahamas. The principal export is containerized cargo. Construction materials, industrial supplies, fuels and used automobiles are also shipped out of the port, primarily to the Bahamas.

(116) Several fishing vessels operate in and out of the harbor. It is the distributing point for supplies to the surrounding country. The Intracoastal Waterway passes through the Indian River east of the city. (See chapter 12.)

(117) **Fort Pierce Coast Guard Station** is on the south side of Fort Pierce entrance channel, on the west side of the cove immediately westward of **Faber Point.**

### Prominent features

(118) Several high rise condominiums, 1 mile north of the entrance, are prominent. A state park is located on the end of the north jetty.

(119) Also prominent are 210-foot meteorological tower 7.2 miles south of the entrance, two 200-foot cement silos within the harbor, and the concrete towers of a nuclear powerplant about 7.6 miles southward of the entrance. The meteorological tower is marked by a fixed red light about halfway up and a flashing red light on top.

### COLREGS Demarcation Lines

(120) The lines established for Fort Pierce Inlet are described in **80.727**, chapter 2.

### Channels

(121) A Federal project provides for an entrance channel 30 feet deep, and an inner channel and turning basin 28 feet deep. Depths in the channel may vary considerably between dredging operations. (See Notice to Mariners and latest edition of chart for controlling depths.) Two rubblestone jetties with revetment extensions protect the entrance. The channel is marked with lighted ranges and lighted buoys.

### Dangers

(122) There are a number of shoals and wrecks in the approaches to the harbor; some of them are marked. A fish haven, about 1.7 miles long, from 0.8 mile to 1.2 miles offshore, is about 2 miles northward of the entrance. In the entrance channel, shoaling tends to build southward from the north side of the channel just inside the jetties, abeam Coon Island, and in the turning basin. Local knowledge is advised to determine the extent of shoaling in these areas.

### Currents

(123) The ocean currents typically run across the channel and there is considerable set when entering or leaving. With an incoming tide, there is a very strong set to the north at the seaward end of the south jetty. The tidal currents in the inlet have a velocity of about 3 knots. (For predictions see the Tidal Currents Tables.) The currents run through the cut parallel to the channel and can reach velocities of 4 to 6 knots. From the turn in the channel and along the Inner Range for about 0.8 mile, the current sets at an angle to the channel, pushing inbound vessels to the west on an incoming tide and outbound vessels to the east on an outgoing tide. At the western end of Causeway Island, where the channel crosses the Intracoastal Waterway, strong cross currents are also encountered with the set to the south on the flood and to the north on the ebb. These currents are influenced by wind and heavy rain runoff or discharge of freshwater from inland areas. Vessels are advised to use caution when making their approach to the bridge that crosses the Intracoastal Waterway between Causeway Island and Fort Pierce and when mooring at the facilities just northward of the bridge.

### Pilotage, Fort Pierce

(124) Pilotage is compulsory for all foreign vessels and for U.S. vessels under register in foreign trade if drawing 7 feet or more of water. Pilotage is optional for U.S. coastwise vessels that have on board a pilot licensed by the Federal Government. The pilot will board at the sea buoy. The pilot boat is a 27-foot fiberglass catamaran with a white hull, white superstructure, and a wide black rubrail. It departs from its berth in Taylor Creek approximately 40 minutes prior to the expected ship arrival at the sea buoy. Pilot ladders should be rigged 1 meter above the water, and the ship proceeding at 4 to 5 knots when the pilot boat comes alongside. The pilots do not maintain a radio listening watch unless underway on the pilot boat. The boat monitors VHF-FM channels 12 and 16. Advance notice of at least 24 hours is required for all arrivals; a 2 hour notice is required for all departures and inner port movements. A 72 hour notice is required for vessels calling on the port for the first time or for vessels not on a regular run. Pilotage is provided by the Fort Pierce Pilots Association. The pilots can be reached by phone number 321-615-7684 or through the Indian River Terminal agent at 772-465-7700. Due to channel conditions, the pilots advise only vessels drawing less than 19 feet (21 feet maximum at High Water Slack) can be allowed into the port. One way traffic is required for larger vessels and tows when transiting the dredged channel.

### Towage

(125) There are no dedicated ship-assist tugs in Fort Pierce. If tugs are needed, arrangements must be made well in advance.

### Quarantine, customs, immigration, and agricultural quarantine

(126) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(127) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(128) Fort Pierce is a **customs station.**

### Harbor regulations

(129) The port director is the county administrator for St. Lucie County. There is no harbormaster in Fort Pierce. Anchoring within the city of Fort Pierce is limited to 96 hours and 14 days within the county limits.

### Speed Zone

(130) The entire waterway east of Dynamite Point to the Intracoastal Waterway is a regulated speed zone and vessels must proceed at a slow speed. West of the Intracoastal Waterway vessels must proceed at idle speed.

### Manatees

(131) A regulated speed zone for the protection of manatees is at Fort Pierce in the vicinity of the municipal yacht basin. (See Manatees, chapter 3.)

### Wharves

(132) The commercial facilities at Fort Pierce are privately owned and located on the mainland just to the west of the turning basin. The northernmost facility is operated by Port Petroleum. Vessels refueling moor to a 140-foot seawall at the end of a wide slip; expect strong tidal currents to set vessels to the north or south on the approach. In 2002, the reported depth at the center of the slip was 20 feet with 12 to 20 feet along the southwest corner of the seawall.

(133) **Indian Marine Terminal** (27°27'30"N., 80°19'24"W.), is the largest facility in the port. Length, 455 feet north side; 330 feet south side; width, 184 feet east side with 154 feet for mooring. The terminal has seven berths for containerized and roll-on/roll-off cargo, vessel layovers and occasional break bulk operations.

(134) **Berth 1:** Length, 125-foot seawall adjoining Port Petroleum fuel terminal; vessel layovers, roll-on/roll-off cargo; height, 6.5 feet.

(135) **Berth 2:** Length, 230 feet on the north side of pier (west end); roll-on/roll-off and general cargo; height, 6.5 feet.

(136) **Berth 3:** Length, 225 feet on the north side of pier (east end); vessel layovers; height, 6.5 feet.

(137) **Berth 4:** Length, 154 feet on the east side of pier, loading and unloading barges and vessel layovers; height, 6.5 feet.

(138) **Berth 5**: Length, 165 feet on the south side of pier (east end); loading and unloading general cargo and vessel layovers; height, 6.5 feet.

(139) **Berth 6:** Length, 165 feet on the south side of pier (west end); loading and unloading general cargo and vessel layovers; height, 6.5 feet.

(140) **Berth 7:** Length, 152-foot seawall adjacent to Berth 6; mooring pilot boat and tugs; height, 6.5 feet.

(141) **The Old City Pier** (27°27'26"N., 80°19'23"W.) just south of the Indian River Terminal, is 330 feet long with two berths and has reported depths of 14 to 25 feet from west to east. The berth on the east side of the pier has a roll-on/roll-off ramp and a reported depth of 10 feet. Primarily used for roll-on/roll-off operations and vessel layovers.

(142) Three breasting dolphins (27°27'46"N., 80°19'18"W.) in the northern section of the turning basin are used for temporary mooring of barges and tugboats; 22 feet alongside was reported in 2002.

### Supplies

(143) Gasoline, diesel fuel, bunker C, water, and some marine supplies are available.

### Repairs

(144) There is a 1,000-ton lift at the railway drydock located 6 miles north on the Intracoastal Waterway. On the north side of Taylor Creek there is a marina and boat repair facility with a 150-ton travel lift. Sea going ships may be drydocked at Port Everglades and Jacksonville.

### Communications

(145) Fort Pierce is served by a Class II railroad, by U.S. Route 1, and by several State highways. The airport is 3 miles northwest of the town.

### Small-craft facilities

(146) The municipal yacht basin, just south of **Moore Creek**, has a marked approach channel from the Intracoastal Waterway. The entrance is immediately south of the bridge. Extreme caution should be exercised as strong crosscurrents exist. The overhead power cable crossing this channel has a clearance of 85 feet. In 2010, the reported controlling depth in the channel was 7 feet. Berths, gasoline, diesel fuel, ice, water, electricity, pump-out station, and limited marine supplies are available. The yacht basin is controlled by a **dockmaster**.

(147) The facilities of a yacht club and a marina are on the south side of the Fort Pierce entrance channel, immediately westward of Faber Point. The yacht club has about 92 open berths with a reported depth of 6 feet in 2006. Gasoline, diesel fuel, water, ice and electricity are available. The marina has berths, electricity, water, ice and pump-out station available.

(148) A dredged channel marked by daybeacons leads from the Intracoastal Waterway to **Taylor Creek**. In 2010, the reported controlling depth was 8 feet to the railroad bridge. Marinas in Taylor Creek have berthing with electricity, gasoline, diesel fuel, water, ice, a pump-out station and wet and dry storage. Hull, engine, and electronic repairs can be made.

## Chart 11474

(149) For a distance of 13 miles southward of Fort Pierce Inlet, broken ground with 18 to 28 feet over it extends from 2.5 to 6 miles offshore.

(150) **Capron Shoal** has a least depth of 18 feet over it about 3.6 miles southeastward of Fort Pierce Inlet. A buoy is 300 yards northeastward of the 18-foot spot.

(151) **Pierce Shoal,** with 21 to 30 feet over it, lies about 2 miles offshore, and 6 to 8.5 miles southeastward of Fort Pierce Inlet.

(152) **St. Lucie Shoal,** with 15 to 30 feet over it, lies from 3 to 6 miles offshore, and 22 to 26 miles northward of Jupiter Inlet Light. It is the principal danger in this area. The northern end of the shoal is marked by a lighted whistle buoy and an unlighted buoy is southeast of a 15-foot spot at the southern end.

(153) Several wrecks are eastward of the broken ground within 10 miles of the shore. The chart should be used as the principal guide.

(154) **Gilbert Shoal**, with 17 to 30 feet over it, is 1 to 1.5 miles offshore about 3 miles north of St. Lucie Inlet.

## Charts 11474, 11472, 11428

(155) **St. Lucie Inlet**, forming the mouth of the St. Lucie River and the south end of the Indian River, lies 20 miles south of Fort Pierce Inlet and 13.5 miles north of Jupiter Inlet Light. The entrance to the inlet is protected by jetties and a detached breakwater. The inner part of the north jetty is in ruins. A rock ledge across the inlet extends south for over 1 mile from the east end of the north jetty ruins. Extensive sandbars are on the north side of the inlet channel from the north jetty to the Intracoastal Waterway. It is reported that shoaling builds up across the channel from both the north and south sides. Depths in the channel vary.

(156) St. Lucie Inlet is dangerous and particularly hazardous to small boats not designed for the open seas. Persons using the inlet should be experienced boatmen and have local knowledge.

(157) It is reported that tidal currents reach a velocity of 7 knots. Currents continue to flow 2 hours after high and low tides. Entrance is easiest just on the flood side of slack water.

(158) The approach is marked by a lighted whistle buoy. The entrance buoys are not charted, as they are frequently moved to mark the best water. It is reported that after heavy storms, buoys may be off station due to dragging or to shifting channels.

(159) It is further reported that ground swells can make inlet passage impossible for all craft. Breakers occur throughout the entire channel as seas, ground swells, and winds increase, particularly on an ebb tide.

(160) While the inlet conditions are generally reported to be worse during winter, hazardous conditions develop rapidly during summer squalls.

(161) Additional information on local existing conditions can be obtained by calling the Fort Pierce Coast Guard Station (telephone: 772-464-6100) and asking for the Coast Guard Auxiliary telephone number.

(162) **St. Lucie River** enters the sea through St. Lucie Inlet and connects with the Gulf coast via the Okeechobee Waterway. State Route A1A highway bridge crossing the river 3 miles above the junction with the Intracoastal Waterway has a fixed span with a clearance of 65 feet. The railroad bridge at Stuart has a bascule span with a clearance of 7 feet at center. The bridge is on automatic operation, normally left in an open position and closed upon the approach of trains. (See **117.317**, chapter 2, for details of operation.) The Roosevelt (U.S.1) highway bridge, adjacent to the west, has a fixed span with a clearance of 65 feet. The Roosevelt bascule bridge has a clearance of 14 feet at the center. The overhead power cable at the bridge has a clearance of 75 feet over the main channel. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.)

(163) Cross currents at the entrance to St. Lucie River create a hazardous condition for vessels and barges making the short turn from the Intracoastal Waterway. Vessels should stay 100 yards southward of a line between Light 4 and Daybeacon 6 to avoid hitting the hard ledge on the north side of the channel.

(164) St. Lucie River has several branches of some commercial importance. These, with the main river, form an important center for yachting and fishing in the winter. Traffic on the river is mostly in fish and timber.

(165) **Manatee Pocket** is a protected body of water about 1 mile long and 0.2 mile wide. It had a reported controlling depth of 4½ feet in 1983. The entrance is 0.6 mile west of the intersection of the St. Lucie River and the Intracoastal Waterway. The channel at the entrance is marked by daybeacons. Berthage, electricity, gasoline, diesel fuel, water, ice, pump-out station, wet and dry storage, and hull, engine, and electronic repairs are available at any of several marinas. A 150-ton mobile hoist is a available at a repair yard at the southeast end of Manatee Pocket. Small boats can obtain protection from tropical storms in Manatee Pocket. The holding bottom is good. Yachts can anchor anywhere for overnight stops.

(166) **Port Salerno,** a small town at head of Manatee Pocket, has a marl plant and is headquarters for a fishing fleet. Several boatyards with machine shops and several resorts with good facilities for yachts are available. (See the small-craft facilities tabulation on chart 11472 for services and supplies available.)

(167) **Pilots** for St. Lucie Inlet can be obtained at Manatee Pocket.

(168) At **Port Sewall,** 1.2 miles above the junction of St. Lucie River and the Intracoastal Waterway, there is a marina where berths with electricity, wet storage and limited marine supplies are available. Hull, engine and electronic repairs can be made; lift capacity 50-tons.

(169) **Rio** is a small real estate development on the north bank of St. Lucie River, 3.5 miles above **Sewall Point.** A privately dredged channel 1 mile west of Light 21 leads to a marina where gasoline, diesel fuel, ice, water, a pump-out station, berthing with electricity and some marine supplies are available; a 10-ton folklift is also available for hull, engine and electronic repairs. In 2001, the reported approach depth was 5.5 feet. Another marina in the slip 0.2 mile westward has gasoline, diesel fuel, electricity, and a lift to 35 tons; hull, engine and electronic repairs can be made.

(170) **Stuart** is a city on the St. Lucie River, 5 miles above Sewall Point. It is the county seat of Martin County and is on the Florida East Coast Railway, U.S. Highway No.1, and the Okeechobee Waterway. The city has a hospital and is the distributing center to the surrounding area, which is noted for its winter vegetables, citrus and tropical fruits, poultry raising, ranching, and commercial fishing.

(171) The municipal pier, 400 yards southeast of the Roosevelt bascule bridge, has berthage available. In 2002, the reported channel and alongside depth was 3.5 feet. On the east bank of the North Fork of the St. Lucie River, 1,200 yards north of the Roosevelt bascule bridge, a yacht sales facility offers maintenance services and fuel deliveries. A travel lift is available.

(172) There is a small protected basin in **Frazier Creek,** 0.3 mile south of the Roosevelt bascule bridge. In 1983, the reported controlling depth was 5 feet from the waterway to the highway bridge about 0.1 mile above the mouth. The bridge has a 33-foot fixed span with a clearance of 6 feet.

(173) **Pilots** for St. Lucie Inlet and connecting waterways can be obtained through the Stuart Chamber of Commerce.

(174) St. Lucie River divides into two forks west of Stuart. The **North Fork** extends several miles in a north-northwest direction. It is about 0.75 mile wide with an even bottom of 10 to 12 feet in depth. The South Fork is described as part of the Okeechobee Waterway, chapter 12.

## Chart 11474

(175) From St. Lucie Inlet to Jupiter Inlet, a distance of 14 miles, several shoals and wrecks are within about 3 miles of the shore. The shoals and wrecks should be avoided by deep-draft vessels. The 20-fathom curve is a safe guide.

(176) **Jupiter Inlet Light** (26°56'55"N., 80°04'55"W.), 146 feet above the water, is shown from a red brick tower on the north side of the inlet, 94 miles south of Cape Canaveral Light. The light is reported to be obscured by high-rise construction from 231° to 234° when within a range of 5.5 miles.

## Charts 11474, 11472

(177) **Jupiter Inlet**, an opening in the beach just south of Jupiter Inlet Light, is 14 miles south of St. Lucie Inlet. It leads to Jupiter Sound on the north, Loxahatchee River on the west, and Lake Worth Creek on the south. A short stone jetty is on the north side of the entrance to the inlet and private lights mark the entrance. In 1983-2000, the reported controlling depth was 4 feet over the bar to the Intracoastal Waterway. Small boats of the fishing fleet use the inlet. The Intracoastal Waterway is 0.5 mile inside the entrance to the inlet. (See chapter 12.)

(178) Jupiter Inlet is dangerous and particularly hazardous to small boats not designed for the open seas. Persons using this inlet should be experienced boatmen and have local knowledge. It is reported that shallow sandbars exist from the lighthouse through the mouth of the inlet and that the sandbar at the junction of the Intracoastal Waterway and the entrance builds up continuously. A very shallow sandbar extends south and east from the north jetty across the entire inlet. The bar is very deceptive and usually lies 1 or 2 feet below the surface. The openings through the sandbar shift with rapidly changing weather conditions and can be very shallow.

### Currents

(179) It is further reported that tidal currents reach a velocity of 6 knots. Eddies and extreme turbulence accompany flood and ebb tides, particularly near the south jetty. Breaking and confused seas frequently exist over the sandbars off the mouth of the jetty. Conditions are worst with ebb tide and easterly winds. Near low water, long ground swells and wake from passing vessels can create dangerous waves in seemingly calm seas. Conditions are most hazardous during the winter months.

(180) Additional information on local existing conditions can be obtained by contacting the Lake Worth Inlet Coast Guard Station (telephone: 561-844-4470) and asking for the Coast Guard Auxiliary telephone number.

## Chart 11466

(181) Between Jupiter Inlet and Lake Worth Inlet, a distance of about 10.5 miles, the coast is clear of shoals with the 10-fathom curve about 1 mile offshore. A fishing pier extends about 340 yards seaward from about 26°53'37"N., 80°03'24"W.

(182) **Lake Worth Inlet** is a dredged cut through the barrier beach 11 miles south of Jupiter Inlet Light and 31 miles north of Hillsboro Inlet Entrance Light. The entrance is protected by two jetties and the cut by revetments.

### COLREGS Demarcation Lines

(183) The lines established for Lake Worth Inlet are described in **80.727**, chapter 2.

(184) **Port of Palm Beach** is a deepwater port development 1.1 miles west of the entrance to Lake Worth Inlet. The port borders the communities of **Riviera Beach** on the north and **West Palm Beach** on the south. It is 259 miles south of Jacksonville and 68 miles north of Miami. The principal cargoes are bulk petroleum products, cement, and general cargo. There is extensive barge traffic. An extensive roll-on/roll-off operation is conducted in the Bahama Island trade. All of the wharves and warehouses are owned by the Port of Palm Beach District.

### Coast Guard Station

(185) **Lake Worth Inlet Coast Guard Station** is inside the entrance about 0.7 mile north of Peanut Island on the west side of the Intracoastal Waterway.

### Prominent features

(186) The dominant landmarks in the area are the charted twin 300-foot stacks at the powerplant adjacent to the port terminal; they are marked with horizontal bands of white and orange and by flashing red lights near their tops. Also prominent from offshore are the many multistoried buildings along the beaches north and south of the inlet. Of these, the 42-story condominium and the Breakers Hotel, 1 mile north and 3.5 miles south of the inlet, respectively, are the most prominent.

### Channels

(187) A Federal project provides for a 35-foot entrance channel, thence a 33-foot inner channel to two turning basins with depths of 33 and 24 feet, respectively, at the Port of Palm Beach. (See Notice to Mariners and latest edition of chart for controlling depths.) Markers include a **271°30'** lighted entrance range, lights, and lighted and unlighted buoys. The north (right outside) quarter of the entrance channel tends to shoal along the north jetty.

### Anchorages

(188) Two offshore anchorage grounds are close north and south of the channel entrance. (See **110.1 and 110.185**, chapter 2, for limits and regulations.) There is no deepwater anchorage in the harbor. Anchorage for craft drawing up to 8 feet is available in the vicinity of **Palm Beach.**

### Dangers

(189) A reef in the form of a ridge with scattered boulders extends for about 300 yards eastward of Peanut Island about 25 feet north of the improved channel. The reef, with a least depth of about 4 feet over it, is extremely dangerous. On the ebb, the current sets across the reef in a northeasterly direction. Two fish havens are 0.7 and 1.5 miles off the north side of the entrance and another is 1.5 miles off the south entrance.

### Manatees

(190) A regulated speed zone for the protection of manatees is in the vicinity of the powerplant on the west side of the turning basin. (See Manatees, chapter 3.)

### Currents

(191) The currents in the inlet are strong and must be carefully guarded against. The current velocity is 2.4 knots on the flood and 3.6 knots on the ebb. Current predictions may be obtained from the Tidal Current Tables.

### Weather, West Palm Beach and vicinity

(192) With the Gulf Stream only about 2 miles (4 km) offshore and prevailing winds off the Atlantic most of the year, the climate of this area is pleasant. The average high temperature for West Palm Beach is 83°F (28.3°C) while the average low temperature is 67°F (19.4°C). July is the warmest month by a fraction of a degree with an average high temperature of 90°F (32.2°C) and an average low temperature of 75°F (23.9°C). January is the coolest month of the year with an average high temperature of 75°F (23.9°C) and an average low of 57°F (13.9°C). An official reading of 100°F (37.8°C) has never been recorded at West Palm Beach but the all-time high temperature is 99°F (37.2°C) recorded in July 1981. The extreme minimum temperature for West Palm Beach is 27°F (-2.8°C) recorded in January 1977. Every month except December and January has recorded maximum temperatures in excess of 90°F (32.2°C) and an average of 75 days each year has a maximum extreme in excess of 90°F (32.2°C). An average of only one day each year has an extreme minimum at or below freezing.

(193) The average annual precipitation for West Palm Beach is 61 inches (1,549 mm). September is the wettest month averaging 8.8 inches (223.5 mm) and February is the driest month averaging only 2.6 inches (66 mm). Snowfall is nearly nonexistent at West Palm Beach and the greatest 24-hour snowfall was trace. This has occurred only once for the 50-year period of record, January 19, 1997.

(194) Winds speeds of 17 knots or more can be expected about 7 to 10 percent of the time from October through April as a result of lows, cold fronts or intensification of the trade winds. While gales are rare, they are most likely during the tropical cyclone season, which runs from June through October on the average.

(195) Since 1842, 60 tropical storms have come within 50 miles (93 km) of West Palm Beach, Florida, 22 of these storms since 1950. The most noteworthy in recent time was Hurricane David in September 1979. Around noon on September 3rd, David raked the West Palm Beach area with 85-knot winds while the center of the storm remained off shore and on August 27, 1964, Hurricane Cleo passed near West Palm Beach with 75-knot sustained winds and guests to 90 knots.

(196) Thunderstorms can generate strong, gusty winds along with heavy rain. They are most likely from June

through September on about 10 to 16 days per month. Visibilities drop below 0.5 mile (0.9 km) on 1 to 2 days per month, on the average, from November through April.

(197) See Appendix B for **West Palm Beach climatological table**.

### Pilotage, Port of Palm Beach

(198) Pilotage is compulsory for foreign vessels and for U.S. vessels under register in the foreign trade and drawing more than 7 feet of water. Pilotage is optional for U.S. coastwise vessels which have a pilot aboard licensed by the Federal Government.

(199) The Port of Palm Beach is served by Palm Beach Pilots Association, at Riviera Beach Marina, 200 E. 13th Street, Suite B, Riviera Beach, FL 33404; telephone 561-845-2628, fax 561-845-2644. The office/station monitors VHF-FM radiotelephone channel 16 and works on channel 14.

(200) The pilot boats are PILOT#1 and PILOT#2; both have gray hulls, white superstructures, and the word PILOT on the sides. PILOT#1 is 31 feet long; PILOT#2 is 35 feet long. Both boats display a white over red light at night. The pilot boats monitor VHF-FM channel 16 and 14, and work on channel 14. The pilot boarding and cruising area, depending on wind and gulf stream current conditions, is near Lake Worth Lighted Buoy LW (26°46'22"N., 80°00'36"W.), or as instructed by the pilots. Vessels are requested to rig the pilot ladder on the leeward side about 1 meter above the water and maintain a speed of 6 knots or less. A northern gulf stream current almost all year makes an approach to the inlet from the southeast the safest, however, at times large swells do occur and alternate approaches may be instructed by the pilots for safety reasons. Large vessels are taken in only at slack water and may be restricted to daylight hours under certain conditions. Pilots do not maintain a 24-hour watch at the pilot office/station, but can be contacted by telephone or through the Palm Beach Marine Operator on VHF-FM channel 28. At least 24 hours advance notice of arrival is requested.

### Towage

(201) Two tugs to 1,000 hp are available and can be obtained through ships' agents or the pilots.

### Quarantine, customs, immigration, and agricultural quarantine

(202) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(203) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(204) Palm Beach is a **customs port of entry.**

### Harbor regulations

(205) Copies of the Port Tariff may be obtained at the offices of the Port of Palm Beach District at the Maritime Office Building in Riviera Beach. The Port Operations Manager assigns berths and enforces the harbor regulations. The Port of Palm Beach is a public corporation created by the State Legislature. Port regulations state it shall be unlawful for any vessel, boat, barge, or other watercraft of any kind to anchor in the channel or turning basin, except in cases of actual emergency.

### Wharves

(206) The Port of Palm Beach has two slips and four marginal wharves, two north and one south of the slips, and one between the slips. A marginal container wharf is 0.2 mile north of the north slip. The port district owns most of the facilities and the port tenants operate most of them. There are about 50 acres of open storage and 150,000 square feet of warehouse space. The port operates its own belt line railroad which connects with the Florida East Coast Railway. Mobile cranes to 230 tons are available, with other equipment available as required. All berths have fresh water available. All berths have a deck height of 8½ feet except Berths 13 and 14, 8 feet, and Berths 20, 21, and 22, 5 feet. Slip 1 is the north slip, Slip 2 is the south slip.

(207) **Berth 1:** marginal wharf immediately southward of Slip 2; 210 feet long; 25 feet alongside; pipelines extend to storage tanks with 40,000-ton capacity; receipt and shipment of general and refrigerated cargo; shipment of molasses; operated by Florida Molasses Exchange, Inc.

(208) **Berths 2, 3:** south side Slip 2; 620 feet long; 35 feet alongside; traveling shiploader with loading rate of 600 tons of sugar per hour; pipelines extend to storage tanks with 2-million-barrel capacity; receipt and shipment of general cargo; receipt of fuel oil and shipment of sugar and molasses; various operators.

(209) **Berth 4:** head of Slip 2; 220 feet long; 25 feet alongside; receipt and shipment of general cargo by small vessel and barge.

(210) **Berths 5, 6:** north side Slip 2; 640 feet long; 35 feet alongside; primary location for receipt of fuel oil, pipelines extend to oil storage tanks with 2 million barrel capacity; receipt of bulk cement; receipt and shipment of general cargo.

(211) **Berth 7:** marginal wharf between Slips 1 and 2; 215 feet long; 25 feet alongside; receipt and shipment of general cargo.

(212) **Berths 8, 9:** south side Slip 1; 700 feet long; 35 feet alongside; receipt and shipment of general cargo; various operators.

(213) **Berths 10, 11, 12:** three roll-on/roll-off ramps at the head of Slip 1; 210-foot face; 35 feet alongside; 2 ½ acres open storage, receipt and shipment of general, containerized, and roll-on/roll-off cargo; operated by Heavy Lift Service Inc.

(214) **Berths 13, 14:** north side Slip 1; 700 feet long; 35 feet alongside; receipt and shipment of general and containerized cargo; operated by Heavy Lift Service, Inc.

(215) **Berths 15, 16, 17:** marginal wharf immediately northward of Slip 1; 610 feet long; 25 feet alongside;

receipt and shipment of general and containerized cargo; mooring cruise vessels; operated by the Crown Cruise Line.

(216) **Berths 18, 19:** S side of slip immediately north of Berth 17; 300 feet long; 25 feet alongside; receipt and shipment of general and containerized cargo and vehicles; operated by Tropical Shipping Co., Ltd.

(217) **Berths 20, 21, 22:** west of Berth 19; three roll-on/roll-off ramps; each 67 feet long; 25 feet alongside; receipt and shipment of roll-on/roll-off cargo; operated by Tropical Shipping Co., Ltd.

(218) **Berth 23:** across slip north of Berth 19; 80 feet long; 25 feet alongside; receipt and shipment of containerized cargo and vehicles; operated by Tropical Shipping Co., Ltd.

(219) **Berths 24, 25:** 0.2 mile north of Slip 1; 450 feet long; 25 feet alongside; receipt and shipment of containerized cargo and vehicles; operated by Tropical Shipping Co., Ltd.

### Supplies

(220) Freshwater is piped to the berths. Diesel fuel and gasoline can be delivered by tank truck. Provisions and some marine supplies are available.

### Repairs

(221) Only minor repair work can be obtained for large ships. The nearest drydocks are at Jacksonville and Port Everglades.

### Communications

(222) Class II railroad connections are available. There are highway connections to U.S. Route 1, Interstate Route 95, and Florida's Turnpike. The **Palm Beach International Airport** is 5.5 miles southwestward of the port area.

(223) The Intracoastal Waterway passes through Lake Worth just eastward of Port of Palm Beach. Facilities in the area for yachts and small craft are given in chapter 12.

## Chart 11466

(224) From Lake Worth Inlet the general trend of the coastline is south for 41 miles to Port Everglades. It is broken by several inlets of little importance. The coast is formed almost entirely by a low sand beach, with more or less conspicuous dunes partly covered by grass and scrub palmetto, and woods in the background. Numerous towns, tanks, radio towers, and scattered buildings are visible from seaward. Conspicuous from offshore are the buildings and pier at Palm Beach, Hillsboro Inlet Entrance Light, and the large buildings and tanks at Fort Lauderdale.

(225) The coast between Lake Worth Inlet and Port Everglades is fairly bold. The 20-fathom curve runs parallel to the beach and for a greater part of the distance is less than 2 miles from it. Several wrecks and obstructions are within 0.5 mile of the shore.

(226) **Palm Beach,** a resort on the narrow island between Lake Worth and the sea, is connected to West Palm Beach by highway bridges. The ocean pier here is used only for amusement purposes. Several other towns and cities are along the shores of Lake Worth.

(227) **Boynton Inlet** (see chart 11467), at the south end of Lake Worth, is a small dredged cut through the outside beach, about 100 feet wide. The entrance to the inlet is protected by jetties. In 1983, the reported controlling depth over the bar and to the Intracoastal Waterway was 5 feet. The inlet is crossed by Route A1A highway bridge which has a fixed span with a clearance of 18 feet. An overhead power cable at the bridge has a clearance of 38 feet. Boynton Inlet is dangerous and particularly hazardous to small boats not designed for open seas. Persons using this inlet should be experienced boatmen and have local knowledge. The channel is unmarked.

(228) It is reported that shoaling exists, commencing about 100 yards south of the end of the north jetty and extending to the south. Submerged rocks extend 15 feet east of the end of the south jetty. Within the inlet, along the north and south jetties, east of the Route A1A highway bridge, is a concrete ledge which is just below the surface at high tide.

(229) Tidal currents through the inlet reach a reported velocity of 8 knots, and with an easterly wind it is impassible because of breakers at the entrance. There is a strong undertow when the tide is ebbing. Eddies and extreme turbulence accompany flood and ebb tides.

(230) It is further reported that except during a flat calm, breaking and confused seas exist in the channel from the bridge to the mouth of the inlet. Conditions worsen as seas and winds increase, particularly when the current is running. Conditions are more hazardous during winter.

(231) A dangerous wreck is about 1.8 miles south-southeast of the inlet.

(232) Additional information on local existing conditions can be obtained by contacting the Lake Worth Inlet Coast Guard Station (telephone: 561-844-4470), and asking for the telephone number of the Coast Guard Auxiliary.

(233) **Boca Raton Inlet** (see chart 11467) is a narrow dredged cut through the beach 5 miles northward of Hillsboro Inlet Entrance Light. It is used mostly by party fishermen. The hotel at **Boca Raton** is a prominent landmark. The mouth of the inlet is protected by short jetties marked by private lights. In 2005, severe shoaling was reported at the entrance to the inlet. Local knowledge is recommended. The bar channel shifts with the winds.

(234) Boca Raton Inlet is dangerous and particularly hazardous to all boats not designed for open seas. Persons using this inlet should be experienced boatmen and should be extremely knowledgeable of the area. The channel is unmarked.

(235) It is reported that shoaling exists 30 yards outside of the inlet and also inside the inlet. Depth at low tide varies from 1 to 3 feet. A sandbar protrudes out of water inside the inlet on the north side. A sandbar extends underwater to within 30 feet of the south jetty. Shoaling and sandbars are continually shifting.

(236) It was reported that increased shoaling may be expected and that the inlet may occasionally be closed by severe weather.

(237) Tidal currents through the narrow channel reach a reported velocity of 7 knots.

(238) It is further reported that except during a flat calm, breaking and confused seas exist at the mouth of the inlet. Conditions worsen as seas and winds increase, particularly during ebb tide. Breaking seas at the mouth of the inlet will extend 200 feet inside inlet mouth. Conditions are more hazardous during winter. Strong easterly winds are often encountered when attempting to navigate the inlet. These are particularly strong in November through May. In May through September heavy thunder storms often occur during early morning and afternoon.

(239) Additional information on local existing conditions can be obtained by calling **Fort Lauderdale Coast Guard Station** (telephone: 954-927-1611).

(240) Highway A1A bridge crossing the inlet has a 45-foot bascule span with a clearance of 23 feet at the center. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.)

(241) **Hillsboro Inlet Entrance Light** (26°15'33"N., 80°04'51"W.), 136 feet above the water, is shown from an octagonal pyramidal skeleton tower with central stair cylinder, lower half of structure white, upper half black, on the beach on the north side of the inlet.

(242) **Hillsboro Inlet** (see chart 11467), 31 miles southward of Lake Worth Inlet, connects with Hillsboro River and the Intracoastal Waterway. It has considerable importance as a base for party fishermen who run out into the Gulf Stream. In 1985, the reported controlling depth was 7 feet in the privately maintained channel. The entrance channel is marked by private lights, a daybeacon, and a lighted entrance buoy, and protected by jetties that are partially awash at low tide. Rocky reefs are reported to extend northward and southward of the respective entrance lights; the southern reef is reported to dry at its southern end at low tide. The current in the entrance is reported to set northward across the channel on the flood, and southward on the ebb. In 1990, shoaling to a depth of about 1 foot was reported at the entrance channel between Lights 1 and 2.

(243) Route A1A highway bridge crossing the inlet has a bascule span with a clearance of 13 feet. The bridgetender monitors VHF-FM channel 16 and works on channel 13. (See **117.1 through 117.59 and 117.289**, chapter 2, for drawbridge regulations.) On the flood tide the current past the bridge is reported to be as much as 5 to 6 knots. An overhead power cable at the bridge has a clearance of 64 feet. Yacht landings are on the south shore on either side of the bridge. A depth of 5 feet is at the landings. Berthage, electricity, gasoline, diesel fuel, water, ice, some marine supplies, a mobile 10-ton lift, and hull, engine, and electronic repairs are available.

(244) Southward of Hillsboro Inlet shoaling is rapid; depths of 6 to 8 fathoms have been found 1.5 miles offshore. A wreck 3.2 miles south of Hillsboro Inlet Entrance Light and 0.4 mile offshore has a depth of about 10 feet over it. Two small rock islets on each side of a stranded vessel were formed by the jettisoning of a cargo of cement about 5 miles south of Hillsboro Inlet Entrance Light and 0.4 mile offshore. They were blasted away during World War II, but until the depth over them has been determined, the area should be avoided by light-draft vessels.

(245) Fish havens extend 1 to 2.4 miles offshore between Hillsboro Inlet and Port Everglades.

(246) A submerged groin is 1 mile north of the entrance of Port Everglades and 0.4 mile offshore.

## Chart 11470

(247) **Port Everglades** is a deepwater port on the east coast of Florida, 301 miles south of Jacksonville and 948 miles from New York. Many of the world's large passenger vessels call at this major cruise port. Although principally a consumer port, considerable foreign commerce passes through. The principal commodities handled include petroleum products, automobiles, bulk cement, steel products, scrap iron, lumber, newsprint, glass, and a variety of general cargo. Two unmarked jetties protect the harbor entrance which is virtually landlocked.

### Prominent features

(248) The most prominent objects seen when approaching the port are four stacks painted with red and white bands about 1.2 miles southwest of the harbor entrance. These stacks are marked by red aircraft lights at night. There are numerous tall hotel buildings on the north side of the entrance close westward of the north jetties. The numerous hotels and several tanks along the beach, and tanks, and radio and television towers in Fort Lauderdale are other conspicuous objects.

(249) Because of the low shoreline good radar targets are limited in the approach to Port Everglades. It is reported, however, that the north and south jetties present good targets. Additionally, the entrance buoys are difficult to identify by radar because of the heavy small-craft traffic in the entrance.

### COLREGS Demarcation Lines

(250) The lines established for Port Everglades are described in **80.727**, chapter 2.

### Channels

(251) A Federal project provides for a 500-foot-wide entrance channel 45 feet deep converging at the jetties

to a 450-foot-wide channel 42 feet deep leading to a turning basin 42 feet deep at the main port facilities with north and south extensions 31 feet deep. From the turning basin southward, the Intracoastal Waterway leading to the Southport terminal has been dredged for a Port Everglades sponsored project width of 500 feet and project depth of 42 feet. Immediately north of the Southport terminal lies a turning notch on the west side of Intracoastal Waterway 850 feet by 750 feet, 42 feet project depth and marked by 7 fingered dolphins to the north and three articulated yellow buoys to the west. The federal maintenance plan includes the Intracoastal Waterway to Southport and the turning notch. Although not a part of the Federal project, the Port Everglades Department of Broward County has dredged the south extension of the turning basin to a depth of 38 feet and will maintain it at that depth. (See Notice to Mariners and latest edition of chart for controlling depths.)

(252) A lighted buoy marks the entrance, and channel markers include lighted buoys, lights, and a **269°30'** lighted entrance range.

### Dangers

(253) Two submerged breakwaters, extending almost 0.7 mile offshore on either side of the entrance, are unmarked. A large abandoned spoil area north of the entrance channel has very little water on it and at times appears above the water as an island; it was reported to be building up to the northwestward in 1983. The shoal area westward of the spoil area is marked by daybeacons. A **Naval restricted area** extends about 2.5 miles offshore and about 4 miles southward of the south edge of the entrance channel. (See **334.580**, chapter 2, for limits and regulations.) Large vessels entering the port on weekends and holidays are advised to exercise extreme caution because of very heavy small-craft traffic. The ruins of a former jetty, covered 3 feet, extend south from the inner end of the north jetty.

(254) A large fish haven extends from 1.5 to 5.7 miles north of the entrance channel and from 1 to 2.2 miles offshore. A smaller fish haven is about 1 mile north of the entrance channel and about 1.5 miles offshore.

(255) Large commercial vessels approach, enter and depart the entrance channel within both quadrants east of Lighted Buoys 2 and 3. Small craft in the vicinity of the approach areas of the entrance channel are advised to be underway and prepared to get out of the way of any large commercial traffic at all times. They are advised never to anchor within 0.6 mile of Lighted Buoy PE or anywhere in the entrance channel itself, in order not to impede the passage of large commercial traffic.

### Anchorage

(256) The commercial anchorage area is NNE of Port Everglades Lighted Buoy 2 (See **110.186**, chapter 2, for limits and regulations.) **All commercial vessels planning to use the Port Everglades anchorage, whether bound for Port Everglades or not, are required to provide the U.S. Coast Guard with an advanced notice of arrival** (See **160.212**, chapter 2, for regulations.) Vessels using this anchorage must report their positions and time of anchoring to the Port Everglades Harbormaster on VHF-FM channel 14. No vessels may anchor in a "dead ship" status (i.e. propulsion or control unavailable for normal operations) without prior approval from the Coast Guard Captain of the Port (COTP). In addition, vessels are not permitted to anchor for more than 72 hours without prior COTP approval. Vessels shall request approval from the USCG COTP via the Port Everglades Harbormaster on VHF-FM channel 14. The anchorage is in close proximity to three (inner, middle, and outer) reefs that run along South Florida's coast. The anchorage area has charted soundings ranging from 125 feet to more than 500 feet. The depth of the western side of the anchorage area averages approximately 125 feet. The bottom type in the anchorage consists of a sand, mud, and coral rubble mixture that does not provide adequate holding during adverse weather. There are also minor obstructions in the anchorage area that are mainly discarded spools of cable; these may be annotated on the chart as obstructions. The close proximity of the anchorage area to the shallow reefs requires vigilance by vessel captains while piloting and anchoring in the area. Violent, unpredictable winds in excess of 50 knots can be associated with local thunderstorm activity. Upon the approach of thunderstorms from any direction or in sustained wind conditions of 25 to 30 knots from NNE through SSE directions, all vessels in the anchorage ground are strongly advised to have engines on standby and be prepared to vacate the anchorage. It is highly recommended that vessels leave the anchorage and head to sea when sustained winds in excess of 30 knots are blowing from NNE through SSE directions. A proper anchor watch is vitally important with the vessel's position being checked frequently and VHF-FM channels 14 and 16 continuously monitored. Although not required, pilotage to the anchorage is available upon request and is strongly recommenced for masters who are unfamiliar with the Port Everglades anchorage. Anchoring south of the entrance channel by vessels with a draft in excess of 12 feet is prohibited. (See **334.480**, chapter 2, for regulations.) The USCG COTP may close the anchorage and direct vessels to depart during periods of adverse weather or at other times as deemed necessary in the interest of port safety or security.

### Currents

(257) The tidal currents in the entrance average about 0.7 knot. In 1983, it was reported that the flood currents attain a velocity of 3 knots and the ebb currents 4 knots. Current swirls of varying characteristics are often encountered in the turning basin and make handling of ships difficult. Prevailing winds from the southeast and east coupled with a rising tide are the most hazardous.

Caution should be exercised to avoid striking the piers or the rocky sides of the turning basin.

(258) The entrance channel has dangerously strong cross currents which vary in strength and are unpredictable in direction. These currents generally run at right angles to the direction of the narrow entrance channel making transit hazardous, without local knowledge, for deep draft vessels. These currents have been reported to be as much as 5 knots.

(259) Several locations in the port are also reported to be affected by man-made currents. The outflow from the Florida Power and Light cooling water discharge canal, just south of Berth 29, will effect passing ships in varying ways depending upon the output of the plant and the size and draft of the ship. After periods of heavy rainfall, the flood control gates in the Everglades of South Florida are opened causing very strong ebb currents which might dominate the flood currents in areas such as the Dania Cut-off Canal.

### Weather, Port Everglades and vicinity

(260) Tropical cyclones threaten (move within 180 miles of) Port Everglades once or twice each year on the average. About 50 percent of these are hurricanes. While the season runs from June through November, about 83 percent of all threats have occurred in August, September, and October. However the port has also been affected, outside of the normal season, in December, February and May. Tropical cyclones have approached the port from all octants although they are rare from the northwest through northeast. While the port is most vulnerable to winds off the open ocean, the relatively flat terrain provides little resistence to strong land winds; however, nearby manmade structures afford some protection. The Australian pines and other tall trees on the east side of the Intracoastal Waterway provide some lee effect from the prevailing easterly winds. Due to the narrow channel opening and two jetty systems the port is well protected from ocean waves except for those approaching from the east. However, energy from even these waves is lost by shoaling and diffraction inside the harbor. Wind waves inside are limited by lack of fetch. Storm tides have exceeded 12 feet (3.6 m) at Fort Lauderdale in the past. The lack of significant elevations on barrier land strips, subjects the entire Intracoastal Waterway in this area, including Port Everglades, to severe flooding from hurricanes. These factors plus the absence of sheltered berths or anchorages makes evasion at sea the best course of action for all seaworthy, deep-draft vessels when a hurricane threatens the port. Thousands of shallow draft boats are moored in the extensive canal system just north of Port Everglades. If feasible, they should be removed and transported inland to higher elevations. Because of the many boats, it might not be possible to move along the Intracoastal Waterway, to seek protection up a canal or river, unless departure is quite early. If a boat must be moored, it should be ballasted to be low in the water, to escape wind effects, and be well secured with allowance for increased water heights. More detailed information may be found in the **Hurricane Havens Handbook for the North Atlantic Ocean** as mentioned in chapter 3.

(261) Aside from the tropical cyclone threat the climate is conducive to marine activities. Gales are rare. They may occur with strong cold fronts or in severe thunderstorms. Winds of 17 knots or more are most likely from September through April when they blow about 2 to 5 percent of the time. Precipitation occurs on about 94 days annually and is most likely in summer. Thunderstorms occur on 10 to 15 days per month from June through October, a period which records more than 60 percent of the annual rainfall total. These brief, heavy showers usually help cool things off in the late afternoon or early evening. Temperatures climb to 90°F (32.2°C) or more on an average of 56 days each year and extreme of 100°F (37.8°C) has been recorded. The extreme minimum in winter is 28°F (-2.2°C). Visibilities are generally good and drop below 0.5 mile (0.9 km) on an average of just 8 days each year; November through March is the most likely period.

### Pilotage, Port Everglades

(262) Pilotage is compulsory for all foreign vessels and for U.S. vessels under register in the foreign trade with a draft of 7 feet or more. Pilotage is optional for U.S. coastwise vessels that have on board a pilot licensed by the Federal Government.

(263) The Port Everglades area is served by Port Everglades Pilots Association, P.O. Box 13017, Port Everglades, FL 33316; telephone 954-522-4491, fax 954-522-4498, radiotelephone VHF-FM channels 14, 16, 18A, 19, and 77.

(264) Port Everglades pilot boat has a gray hull, white superstructure with the word PILOT displayed on the sides. The pilot boat displays the hotel flag by day, and a white light over a red light at night. The pilot boat monitors and works VHF-FM channels 14 and 16. The pilots board in the vicinity of Port Everglades Lighted Buoy PE (26°05'30"N., 80°04'46"W.), day or night. The buoy is equipped with a racon. Vessels should maintain a speed of 7 knots and provide a pilot ladder 3 feet (1 meter) above the water on the lee side. Swift variable currents, usually east of the buoy, can affect boarding procedures.

(265) Arrangements for pilots can be made through ships' agents or the Port Everglades Harbormaster (telephone: 954-468-3531). At least 24 hours advance notice of arrival is requested, with confirmation given 1 hour in advance of arrival by radiotelephone.

### Towage

(266) Three conventional tugs to 4,200 hp, two tractor tugs to 5,100 hp, and one Ship Docking Module of 4,000 hp are available for docking and undocking. Arrangements for tugs should be made through the harbormaster's office.

### Quarantine, customs, immigration, and agricultural quarantine

(267) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(268) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) There are five general hospitals and several smaller private hospitals in the area.

(269) Port Everglades is a **customs port of entry.**

### Coast Guard

(270) Fort Lauderdale Coast Guard Station is on the east side of the Intracoastal Waterway southeast of the turning basin.

(271) **Harbor regulations** are established by the Port Everglades Department of Broward County. The administration, operation and maintenance of the port are under the direction and supervision of the port director. The **harbormaster** clears all traffic passing through the port, assigns berths and enforces the regulations ashore. The harbormaster should be contacted concerning all ship movements and any requirements that ships may have for their safe passage through the port, such as tug boat assistance or the removal of temporary obstructions. The Marine Division of local, county and state police departments enforce the regulations afloat. A copy of the port tariff is available at the port office which is in the Port Administration Building close westward of Pier 5. The harbormaster's office in the Port Administration Building can be contacted 24 hours a day by telephone (954-765-4602) or on VHF-FM channel 14.

### Manatees

(272) Regulated speed zones for the protection of manatees are in Port Everglades. (See Manatees, chapter 3.)

### Wharves

(273) Port Everglades has numerous deepwater berths adjacent to the main entrance channel and southern branch of the Intracoastal Waterway. All the berths are owned and operated by the Port Everglades Department of Broward County. The port has 380 acres of open storage, over 440,000 square feet of covered storage, over 2 million cubic feet of cold storage space, 380 electrical reefer outlets and 8 roll-on/roll-off ramps. Foreign Trade Zone No. 25 with 388,600 square feet of warehousing is also located in the port. Privately owned facilities provide over 9½ million barrels of storage space for petroleum products as well as 34 cement silos totaling 112,000 ton capacity. Berths 4 through 15 have pipeline connections available for handling petroleum products, asphalt, and other bulk liquids. Heavy lift cranes up to 300 tons, six container gantry cranes of 30 to 50 tons, and modern cargo handling equipment are available at the port. Containers can be worked at all berths listing general cargo by means of ship's gear or mobile container handling equipment available in the port. All berths have access to the highways and some have rail connections. The alongside depths given for each facility described are project depths. Actual depths alongside, in almost all locations, exceed project depth. For information on the latest depths, contact the Port Everglades Department of Broward County or the Port Everglades Harbormaster. Only the major facilities are described. For a complete description of the port facilities, refer to Port Series No. 16, published and sold by the U.S. Army Corps of Engineers (see Appendix A for address).

(274) **Berth 1A:** east side of Pier 6; 180 feet long; 12 feet (reported) alongside; deck height, 9 feet; used as a layover berth.

(275) **Berth 1B:** south side of Pier 6; 220 feet long with an adjacent 70-foot wide ro/ro ramp; 23 feet (reported) alongside; deck height, 9 feet; 6 feet at ramp; used as a lay-over berth.

(276) **Berths 1, 2, and 3:** east side of Pier 4; 1,600 feet long; 31 feet alongside; deck height, 9 feet; ro/ro cargo at berth 1, secondary fiber, break bulk and general cargo, Naval ships, cruise ships.

(277) **Berth 4:** south side of Pier 4; 900 feet long; 38 feet alongside; deck height, 7.5 feet; ro/ro cargo at head of slip, general cargo, cruise ships.

(278) **Berth 4A:** head of slip 2; 290 feet along; 42 feet alongside; deck height, 4 feet; fingered ro/ro ramp for ships at berths 4 and 5. products.

(279) **Berth 5:** north side of Pier 2; 900 feet long; 38 feet alongside; deck height, 7.5 feet; ro/ro cargo at head of slip, break bulk and general cargo, petroleum products, asphalt.

(280) **Berth 6:** east face of Pier 2; 380 feet long; 38 feet alongside; deck height, 7.5 feet; break bulk and general cargo.

(281) **Berths 7 and 8:** south side of Pier 2; 1,200 feet long; 38 feet alongside; deck height, 7.5 feet; primarily petroleum products, asphalt, occasional general cargo at berth 7.

(282) **Berths 8A:** head of slip 1; 300 feet long; 38 feet alongside; deck height, 7.5 feet; miscellaneous and tug lay-overs while barges being worked.

(283) **Berths 9 and 10:** north side of Pier 1; 1,200 feet long; 38 feet alongside; deck height, 7.5 feet; petroleum products.

(284) **Berth 11:** east face of Pier 1; 500 feet long; 38 feet alongside; deck height, 7.5 feet; liquefied petroleum gas with pipelines to storage tanks.

(285) **Berths 12 and 13:** south side of Pier 1; 1,226 feet long; 38 feet alongside; deck height, 7.5 feet; petroleum products.

(286) **Berths 14 and 15:** north side of Pier 3; 1,226 feet long: 33 feet alongside; deck height, 9 feet; rail mounted bulk cement self unloaders and pipelines leading to 34 cement silos adjacent to dockside; primarily bulk cement, petroleum products, occasional break bulk and general cargo.

(287) **Berths 16, 17 and 18:** east side of Pier 3; 1,648 feet long with 43-foot wide Ro/Ro ramp at south end of Berth 18; 38 feet alongside; deck height, 9 feet at ramp;

one 30 ton container gantry crane having an outreach of 108 feet at 90 feet above MHW and one 50 ton container gantry crane having an outreach of 113 feet at 109 feet above MHW, pipelines extending to cement silos; containers, break bulk and general cargo, ro/ro cargo using ramp at west end of Berth 19.

(288) **Berths 19 and 20:** Pier 5; 1,300 feet long with 84 foot wide Ro/Ro ramp at west end of Berth 19; 38 feet alongside; deck height, 9 feet, 6 feet at ramp; break bulk and general cargo, Ro/Ro cargo using ramp at south end of Berth 18, Naval ships, cruise ships.

(289) **Berths 21 and 22:** west side of Pier 7; 1,475 feet long; 38 feet alongside; deck height, 8 feet; primarily cruise ships, Naval ships, occasional general cargo.

(290) **Berth 23:** north side of Pier 7; 200 feet long; 38 feet alongside; deck height, 9 feet; berth no longer used–pier head is occupied by a restaurant.

(291) **Berths 24 and 25:** east side of Pier 7; 1,369 feet long; 42 feet alongside; deck height, 9 feet; cruise ships, Naval ships, lay-overs.

(292) **Berths 26 and 27:** east side of Pier 9; 1,337 feet long; 42 feet alongside; deck height, 9 feet; break bulk and general cargo, cruise ships, Naval ships.

(293) **Berths 28A - 28F:** surrounding the small basin in the southern half of Pier 9; 28A (north wall), 480 feet; 28B and 28E (on finger pier), 350 feet each; 28F (south wall), 400 feet; 28A to 28E have 27 feet alongside, 28F has 21 feet alongside; deck height, 9 feet; 28A - harbor tug dockage; 28B to 28D - lay-over berths; 28F - general cargo.

(294) **Berth 29:** east side of Pier 9; 800 feet; deck height, 9 feet: 42 feet alongside; break bulk and general cargo, primary deep draft lumber dock.

(295) **Berth 30:** north side of Southport terminal; 900 feet; deck height, 11 feet; 42 feet alongside; general cargo, scrap metal, bulk products.

(296) **Berths 31 and 32:** east side of Southport terminal; 2,000 feet; deck height, 11 feet; 42 feet alongside; three 40 ton container gantry cranes having an outreach of 145'-06" at 130 feet above MHW with setbacks of 5 feet from the bulkhead and 9 feet from the fenders; containers.

(297) **Berth 33A:** southeast corner of Southport terminal; 800 feet, 140 feet at ramp; deck height, 11 feet, 9 feet at ramp; 42 feet alongside; container cranes from berths 31 and 32 can be used; containers and ro-ro cargo.

(298) **Berths 33B and 33C:** southeast corner of Southport terminal, adjacent to 33A; finger pier 500 feet long by 20 feet wide between the two berths; 120 feet ramp at each berth; deck height, 11 feet, 7 feet at ramp; 42 feet alongside; ro-ro cargo.

(299) **Supplies** of all kinds in any quantity can be obtained and all types of marine supplies are available in Port Everglades. All berths have fresh water pipelines and some have electrical shore power connections. Berths 1 through 27 have pipeline connections for bunkering vessels while alongside. Berths 28 through 33 are accessible by tank truck and barge. Arrangements can be made for special blended fuels.

### Repairs

(300) There are no major repair facilities for large vessels in Port Everglades. The nearest major repair facility is in Jacksonville.

(301) Several machine, electrical, electronic, and marine engine repair firms located off the waterfront can make above-waterline repairs to small craft.

### Communications

(302) Class II railroads serve the port through a beltline owned by the port but leased and operated by Seaboard System Railroad. Truck and barge lines serve the port and local and interstate bus service is available. Many domestic and overseas airlines serve the port through the **Fort Lauderdale-Hollywood International Airport,** 1 mile southwest of the port.

### Small-craft facilities

(303) Yachting and small-craft facilities are centered at Fort Lauderdale close northward of the port and are described with the Intracoastal Waterway in chapter 12.

(304) **Port Laudania**, just south of Port Everglades, is used by small ships handling general cargo and heavy equipment. The 3.1-mile route from Port Everglades entrance to the port is through the main channel, thence southward for 1.8 miles in the Intracoastal Waterway and westward for 0.9 mile in the Dania Cut-Off Canal to a 540 by 310-foot turning basin on the north side. Due to the size and draft of the commercial vessels calling at Port Laudania, the center of the channel in the Dania Cut-off Canal is generally required for safe navigation. To prevent dangerous meeting situations, Security calls should be given by vessels over 50 feet in length or over 7 feet in draft on VHF-FM channels 13 and 16 prior to transiting the Dania Cut-off Canal. In 1983, the reported controlling depth from the Intracoastal Waterway to the turning basin was 5 feet. An overhead power cable across the Dania Cut-Off Canal has a clearance of 130 feet. Facilities include 1,440 feet of wharfage with 14 feet reported alongside, five ramps for roll-on/roll-off loading, 9 acres of open storage, over 15,000 square feet of enclosed warehouse storage, water, fuel and lubricants by truck. Truck service is available, and railroad sidings are nearby. Small-craft facilities in the area are described in chapter 12.

## Chart 11466

(305) Between Port Everglades and the Miami Harbor entrance, 20 miles to the southward, the general trend of the coastline is south, and it is formed almost entirely by a low sand beach. The large buildings and tanks in Hollywood, Miami Beach, and Miami are particularly conspicuous from seaward.

(306) This section of the coast is also fairly bold, and the 20-fathom curve runs parallel to the beach at a distance of about 2 miles until in the Miami Harbor entrance where the curve of the shore becomes south-southwestward and the 20-fathom curve lies about 4 miles offshore. Inside this curve shoaling is rapid, and northward of the Miami Harbor entrance 6 to 8 fathoms are found in places 1.5 miles from the beach.

(307) **Hollywood** is a popular resort 5 miles south of Port Everglades and about 1 mile west of the Intracoastal Waterway. The Florida Bible College, a very prominent structure, is on the ocean beach east of the city.

## Charts 11466, 11467

(308) **Bakers Haulover Inlet** has been dredged through the barrier beach at the north end of Biscayne Bay, 11.6 miles south of Port Everglades, to provide circulation of water in the bay. The channel leads westward through the inlet, thence northward to a boat basin on the east side of the channel and connects with the Intracoastal Waterway north of the basin and through a cut opposite the basin. In 2008, the controlling depth was 10.9 feet through the inlet to the highway bridge, thence 10 feet in the basin and 8 feet in the channels leading to the Intracoastal Waterway. Route A1A highway bridge over the inlet has a fixed span with a clearance of 32 feet; an overhead power cable just east of the bridge has a clearance of 53 feet. Current velocities of about 2.9 knots on the flood and 2.5 knots on the ebb have been recorded in the inlet. (For predictions see the Tidal Current Tables.)

(309) Many charter-boat fishermen use the inlet in good weather. Several prominent hotels are south of the inlet. The Intracoastal Waterway is 0.4 mile inside the entrance.

(310) The Florida Department of Natural Resources has established a **slow-no wake speed zone** in the Intracoastal Waterway where the channels converge in the vicinity of Bakers Haulover Inlet.

(311) An unmarked fish haven is about 5.5 miles northeast of the entrance channel and about 2.1 miles offshore.

## Chart 11468

(312) **Miami Harbor** is a deepwater port on the east coast of Florida under the jurisdiction of the Metropolitan Dade County Seaport Department. It is 324 miles south of Jacksonville, 971 miles from New York, and 151 miles from Key West. It is principally a consumer port, but considerable foreign commerce passes through, and it is of great importance as a cruise port. The principal commodities handled are petroleum products, bananas, steel products, meat, newsprint, foreign cars and other vehicles, alcoholic beverages, and general cargo. Two unmarked jetties protect the harbor entrance, known as **Government Cut,** which was dredged to form a deepwater entry to the port.

(313) **Miami,** the State's most populated city, covers most of the west shore of Biscayne Bay north of Key Biscayne and is 5 miles from the Gulf Stream. It is an internationally famous winter resort and a popular yachting center, particularly in winter. A large number of small boats that fish and cruise along the Florida Keys operate out of the port.

(314) **Miami Beach** occupies the barrier beach that separates the ocean from the upper part of Biscayne Bay and is also an important yachting center. A number of causeways, with bridges over the channels, form good highway connections with Miami and the mainland communities. The city is principally residential, except for some shops and amusement places. The numerous large hotels take up most of the beach and along Biscayne Bay. Marinas, yacht basins, and numerous small private landings are on the west side of the city along the canals and other waterways off Biscayne Bay. A fishing pier extends out into the sea about 0.3 mile north of the jetties. **Miami Beach Coast Guard Base** and a commercial terminal are northward of the main ship channel near the east end of the MacArthur Causeway. Miami Beach City Yacht Harbor is on Meloy Channel at the southwestern end of Miami Beach.

(315) **Prominent features** (see also chart 11466).–There are numerous tall buildings and hotels in Miami and along the oceanfront at Miami Beach are visible for miles in all directions. A very prominent landmark in Miami Beach is the tall green and black building of a saving and loan company at about 25°47'26"N., 80°07'56"W., on which the red obstruction lights and an illuminated time and temperature sign, flashing from 7 a.m. to midnight, can be seen over 16 miles offshore. A tall stack and water tank on Virginia Key, Cape Florida Light, the aviation light at **Miami International Airport,** a number of radio and television towers, and numerous other tanks and towers are also prominent.

(316) Radar targets in the approaches to Miami Harbor are poor, except for the land and jetty configurations. Heavy small-craft traffic in the vicinity of the sea and entrance buoys may make visual or radar identification of these buoys difficult. In making a night approach, the many lights on Miami Beach may make identification of navigational aids difficult.

### COLREGS Demarcation Lines

(317) The lines established for Miami are described in **80.730**, chapter 2.

### Channels

(318) A Federal project provides for a 44-foot channel from the sea buoy to inside Government Cut, then 42 feet to the Fisher Island Turning Basin and to the end of container berth in Fishermans Channel. Miami Main Channel on the north side of the Port of Miami has a project depth of 36 feet to Main Turning basin with the

same depth which is off the northwest corner of Dodge Island. The turning basin south of Dodge Island has a project depth of 42 feet. The Federal project extends 1,200 feet west of the basin. The channels and turning basins are maintained at or near project depths (See Notice to Mariners and latest edition of chart for controlling depths). In 1998, the area between Miami Main Channel and the Port of Miami off the north side of Dodge Island had depths of 31 to 36 feet. Mariners are advised that abrupt shoaling may be encountered along the northerly and southerly edges of the dredged channel.

(319) A fishing pier, marked by a light at each end, is on the south side of the inshore end of the north jetty. The lights are reported to be difficult to distinguish.

(320) A shoal marginal area about 100 feet wide extends between the northern edge of the channel and the MacArthur Causeway along almost its entire length.

(321) A lighted buoy marks the entrance; the buoy is equipped with a RACON. Channel markers include lighted buoys, lights and lighted ranges. A Precautionary Area has been established with a radius of one nautical mile around the sea buoy. This is necessary because large ships inbound and outbound of the port will board and disembark pilots within this area and will be severely limited in their ability to maneuver. All vessels are to exercise extreme caution within this area. Vessels may not anchor within those portions of the Precautionary Area that lie outside the designated anchorage.

(322) **Meloy Channel** branches from the main channel at the inner end of the land cut and extends northwestward along the southwest shore of Miami Beach to MacArthur Causeway. In 1998, the reported controlling depth was 9 feet.

(323) **Fishermans Channel** is a private channel maintained by the City of Miami. The channel leads westward from the turning basin at Fisher Island for about 2.0 miles to a turning basin off the southwestern corner of Dodge Island; then southwestward to the junction with the Intracoastal Waterway. The channel west of the 1,200-foot extension from the turning basin south of Dodge Island is maintained by Miami-Dade County, and in 1995 had a depth of about 23 feet with lesser depths along the southern edges of the channel. (See Notice to Mariners and latest edition chart for controlling depths.) Natural depths to 10 feet lead from the turning basin off Dodge Island to the Intracoastal Waterway. The channel is well marked.

(324) Other channels in Biscayne Bay are discussed with the Intracoastal Waterway in chapter 12.

### Anchorages

(325) A Federal anchorage is located north of the sea buoy. (See **110.188**, Chapter 2, for limits and regulations.) Non-U.S. Flag vessels destined for the anchorage must provide a 24-hour advance notice of arrival per Title 33 Code of Federal Regulations Part 160.207 before entering the anchorage area to anchor. Any vessel desiring to use the anchorage must notify the Coast Guard Captain of the Port, via the Biscayne Bay Pilots, on VHF-FM channel 12 or 16. Vessels granted permission to anchor must maintain a 24-hour bridge watch by an English speaking deck officer monitoring VHF-FM Channel 16. This individual must perform frequent checks of the vessel's position to ensure the vessel does not drag anchor.

(326) Vessels which are experiencing serious operating casualties such as malfunction of main propulsion, main steering, or anchoring equipment, or which are planning to perform main propulsion engine repairs or maintenance, must immediately notify the Coast Guard Captain of the Port, via Coast Guard Sector Miami, on VHF-FM Channel 16. The Coast Guard Captain of the Port may close the anchorage area and direct vessels to depart the anchorage during periods of adverse weather or at other times as deemed necessary in the interest of port safety. The anchorage is in close proximity to the three-reef system that runs along the Atlantic Ocean coast of south Florida. Recent vessel groundings have shown there is very little time to respond to a dragging anchor before coming into contact with the inshore reefs. The holding ground in the anchorage consists of shallow sand, mud and coral rubble covering of the limestone substrate. During periods of high winds and seas, vessels anchors may not hold firmly in this ground. Violent, unpredictable winds in excess of 50 knots can be associated with local heavy thunderstorm activity. The area is also susceptible to large waterspouts. Upon the approach of thunderstorms from any direction or in sustained winds of 25 to 30 knots from NNE through SSE, all vessels are warned to have main propulsion engines on standby and be prepared to vacate the anchorage. When sustained winds in excess of 30 knots from NNE through SSE are to be expected, vessels may be ordered from the anchorage and advised to head directly to sea. Although not required, pilotage to the anchorage is available upon request and is strongly recommended for vessel masters who are unfamiliar with the anchorage.

### Dangers

(327) Shoals extend about a mile offshore northward of the entrance, and vessels approaching from the northward should keep at least 1.5 miles offshore until within 4 miles of the entrance and then haul out for the sea buoy. A fish haven with 17 feet over it is about 3.5 miles NE of Miami Harbor entrance in about 25°48'34"N., 80°05'26"W. The outer reefs, for about 10 miles south of the entrance, are unmarked except for the northerly red sector in Fowey Rocks Light, and vessels approaching from that direction should stay outside this sector until well up before closing the sea buoy.

### Currents

(328) Strong tidal currents run in the entrance between the jetties; the current velocity being about 2 to 4 knots.

A northerly wind causes a considerable southerly set across the ends of the jetties. Vessels are advised to favor the southerly side of the entrance channel during southerly winds, as a pronounced northerly set may be experienced.

(329) The Biscayne Bay Pilots report variances between predicted and actual currents. Cross-channel current variations in Government Cut are particularly difficult to negotiate. Caution should be exercised when entering Government Cut from the sea during flood tide with northeasterly winds; a strong turning torque occurs when the bow is just inside the north jetty. A similar but less serious situation occurs when leaving the port during ebb tide. Horizontal current gradients which may make maneuvering difficult occur in the turning basin north of Fisher Island.

(330) Daily predictions for Miami Harbor entrance are given in the Tidal Current Tables.

**Weather, Miami and vicinity**

(331) A subtropical marine climate features a long, warm summer with abundant rainfall followed by a mild, dry winter. Winds blow mainly from the east through southeast. This is often a combination of trades reinforced by an afternoon sea breeze. At night, winds may be more variable, lighter and sometimes blow off the land. From fall through spring, fronts, and sometimes lows, add to the variability but also cause a strengthening of winds. Winds speeds during these seasons climb to 17 knots or more, 2 to 5 percent of the time. Along the coast, winds are often stronger than inland.

(332) The marine influence is also reflected in the precipitation and temperatures. Miami Beach records about 48 inches (1,219 mm) annually compared to nearly 59 inches (1,499 mm) at airport. At the airport, June is the wettest month averaging 9 inches (228.6 mm) of rainfall while December is the driest month averaging 1.9 inches (48.3 mm). Snowfall is almost unheard of in Miami but on January 19, 1977 snow did fall. A dusting accumulated as far south as Ft. Lauderdale and flakes fell and melted on impact at Miami and as far south as Homestead, 20 miles south of Miami.

(333) The average high temperature at Miami is 83°F (28.3°C) and the average low is 69°F (20.6°C). August is the warmest month with an average high of 90°F (32.2°C) and an average low of 77°F (25°C). January is the coolest month with an average high of 76°F (24.4°C) and an average low of 60°F (15.6°C). The maximum temperature at Miami has never reached 100°F (37.8°C) and the extreme maximum of 98°F (36.7°C) has been recorded on five separate occasions, the last being on August 1, 1990. The coldest temperature on record is 30°F (-1.1°C) recorded on January 22, 1985. Miami has an average of 58 days each year when the temperature climbs above 90°F (32.2°C) and only six days each year when the temperature falls below 45°F (7.2°C).

(334) Visibilities drop to ¼ mile or less (&lt_1;0.5 km) on about 7 days each year.

(335) Tropical cyclones are most likely to affect this area during August, September, and October although they can occur in any month. One or two tropical cyclones will threaten Miami in an average year but hurricane force winds are expected about once every 7 years. Miami lies in the heart of the U.S. hurricane belt, in an area where tropical cyclones are often recurving, slowing and intensifying. Of the 58 tropical cyclones that threatened Miami during the period 1842-1995, 52 occurred during the months August, September, and October and 24 have occurred since 1950. At this latitude, along with the proximity of the Caribbean Sea and much warmer water, October is the most likely month of occurrence. The predominate direction from which the storm arrives is from the south or southeast. Hurricane Cleo in 1964 and Hurricane Andrew in 1992 are likely the most noteworthy storms to affect Miami in recent memory. Hurricane Cleo was a very small storm and did little damage. It passed near Miami on August 27, 1964. It is perhaps most noteworthy due to it's punch. Maximum winds were 95 knots with gusts to 120 knots. Hurricane Andrew passed just south of Miami on August 24, 1992. Andrew goes on record as being the storm having the third lowest air pressure at landfall of any storm in U.S. history. Andrew ravaged Homestead Florida in the early morning hours of August 24 with winds in excess of 150 knots on a path that took it across southern, Florida, in four hours. Andrew ranks as the most costly natural disaster to date for the United States.

(336) (See Appendis B for **Miami climatological table**.)

**Pilotage, Miami**

(337) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in the foreign trade with a draft of 7 feet or more. Pilotage is optional for coastwise vessels which have on board a pilot licensed by the Federal Government.

(338) The Miami area is served by Biscayne Bay Pilots Association, at the far east end of the Port of Miami on Dodge Island, 2911 Port Blvd., Miami, FL 33132; telephone 305-374-2791 (office), 305-375-9453 (dispatch); fax 305-374-2896; VHF-FM radiotelephone channel 16. All types of vessels are served.

(339) Biscayne Bay Pilots have four boats: MIAMI, 42 feet long; BISCAYNE, 42 feet long; NO. 2, 36 feet long; VIZCAYA, 52 feet long; all boats have black hulls with buff superstructures, and the word PILOT in black letters on the sides. International Code Flag H is flown by day, and the standard pilot lights are displayed at night. The pilot boats monitor VHF-FM channel 16 and work on channel 12. The pilot boarding and cruising area is close seaward of Miami Lighted Buoy M (25°46'06"N., 80°05'00"W.). The buoy is equipped with a racon. Pilots will board vessels day or night. Vessels are requested to rig the pilot ladder on the leeward side about 1 meter above the water, and maintain a speed of about 5 knots. Large deep-draft vessels are requested to stay at least 1 mile eastward of the sea buoy for pilot boarding because

of the strength and proximity of the Gulf stream current.

(340) Pilotage is usually arranged by telephone or fax through ship's agents. Vessels are requested to give a 24-hour advance notice of arrival with confirmation 1 hour before ETA by radiotelephone.

### Towage

(341) There are large tugs of up to 3,000 hp available in the port. **Salvage,** wrecking, and diving equipment is available.

### Quarantine, customs, immigration, and agricultural quarantine

(342) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(343) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) There are more than 10 public and private hospitals in Miami and 3 at Miami Beach. Many others are in the surrounding area.

(344) A U.S. Quarantine station is at Miami. (See Appendix A for address.)

(345) Miami is a **customs port of entry.**

### Coast Guard

(346) The **district office** is in downtown Miami. (See Appendix A for addresses.) Miami Coast Guard Base and Miami Sector Office are on Causeway Island, 1.2 miles inside the outer end of the entrance north jetty.

(347) **Harbor regulations** are established by the Metropolitan Dade County Seaport Department. The Seaport Director assigns berths and enforces the regulations. It is unlawful for any vessel or other craft to proceed at a speed which will endanger other vessels or structures. Official signs are posted indicating limiting speeds through critical portions of the harbor or waterways.

### Wharves

(348) The Port of Miami has over 30 deepwater berths adjacent to the Miami Harbor Channel; these include the berths at the Port of Miami on Dodge Island, and the privately owned facilities on the north side of Fisher Island and just west of Causeway Island.

(349) The facilities at the Port of Miami are owned by the Miami-Dade County Seaport Department. All berths have fresh water available, but electric power and telephone hookups are not provided. Dodge and Lummus Islands are fully merged, and should be considered a single facility. Vehicular traffic is served by a six-lane elevated highway bridge over the Intracoastal Waterway. A single track bascule bridge allows Florida East Cost Railway to access warehouses A, B, C & G in the cargo area of the Port. A four-track railway marshaling yard is provided in the cargo area. Fisher Island can only be reached by water transportation (shuttle barges). A total area of approximately 609,000 square feet of covered storage is available in transit sheds A, B, C, D. E and G. Fifty thousand square feet of refrigerated space is available in Shed G ; operated by a private company.

(350) The port has ten gantry cranes at the southeastern end of the facility. Three cranes have a 40-ton lift capacity, while the remaining seven gantry cranes can lift 50 tons. Mobile cranes are available through a private operator on the port, and from various contractors in the Miami area.

(351) The depths alongside each facility are reported depths. (Contact the Miami-Dade Seaport Department, Biscayne Bay Pilots Association or private operator for the latest depths). Only the major facilities of the port are described. For a complete description of the port facilities, refer to Port Series No. 16, published and sold by the US Army Corps of Engineers. (See Appendix A for address).

(352) **Port of Miami, Passenger Terminal No. 6** (25°46'48"N., 80°10'51"W.): 750-foot face, 32 feet alongside; deck height, 7.5 feet; mooring cruise vessels and harbor tugs; boarding passengers; operated by Miami-Dade County Seaport Department and Moran Towing of Miami, Division of Moran Towing Corp.

(353) **Port of Miami, Passenger Terminals Nos. 1 to 5, and 10 (Bays 1 to 25¾)** (25°46'45"N., 80°10'34"W.): 3,220-foot face; 31 to 36 feet alongside; deck height, 7.5 feet; mooring cruise vessels; boarding passengers; operated by Miami-Dade County Seaport Department.

(354) **Port of Miami, Bays 25¾ to 38** (25°46'33"N., 80°10'04"W.): 1,600-foot face; 36 feet alongside; deck height, 7.5 feet; mooring cruise vessels; boarding passengers; operated by Miami-Dade County Seaport Department.

(355) **Port of Miami, Passenger Terminals Nos. 8 and 9 (Bays 38 to 45)** (25°46'28"N., 80°09'56"W.): 1,680-foot face; 36 feet alongside; deck height, 7.5 feet; mooring cruise vessels; boarding passengers; operated by Miami-Dade County Seaport Department.

(356) **Port of Miami, Bays 45 to 55** (25°46'24"N., 80°09'46"W.): 1,220-foot face; 31 to 36 feet alongside; deck height, 7.5 feet; 119,000 square feet covered storage; receipt and shipment of conventional and roll-on/roll-off general cargo; shipment of automobiles; operated by Miami-Dade County Seaport Department.

(357) **Port of Miami, Roll-on/Roll-off Berth 55W** (25°46'22"N., 80°09'42"W.): 900-foot face; 31 feet alongside; deck height, 7.5 feet; container storage area in rear; receipt and shipment of conventional and roll-on/roll-off general cargo; operated by Miami-Dade County Seaport Department.

(358) **Port of Miami, Roll-on/Roll-off Berth 59W** (25°46'21"N., 80°09'36"W.): 550-foot face; 35 feet alongside; deck height, 7.5 feet; container storage area in rear; receipt and shipment of conventional and roll-on/roll-off general cargo; operated by Miami-Dade County Seaport Department.

(359) **Port of Miami, Roll-on/Roll-off Berth 65W** (25°46'21"N., 80°09'30"W.): 690-foot face; 35 feet alongside; deck height, 7.5 feet; container storage area in

rear; receipt and shipment of conventional and roll-on/roll-off general cargo; operated by Miami-Dade County Seaport Department.

(360) **Port of Miami, Container Terminal, Berths 1 to 5 (Gantry Crane Berths 99 to 130.5)** (25°45'58"N., 80°09'12"W.): 4,377-foot face; 42 feet alongside; deck height, 12 feet; ten traveling container-handling cranes to 50-ton capacity; three 40-ton gantry cranes; paved storage areas to 135 acres with refrigerated cargo containers in rear; receipt and shipment of containerized general cargo; operated by Miami-Dade County Seaport Department.

(361) **Port of Miami, Bays 144 to 148** (25°46'02"N., 80°09'45"W.): 600-foot face; 30 feet alongside; deck height, 7.5 feet; container storage area in rear; receipt and shipment of containerized and roll-on/roll-off general cargo; operated by Miami-Dade County Seaport Department.

(362) **Port of Miami, Roll-on/Roll-off Berth 154** (25°46'08"N., 80°09'53"W.): 670-foot face; 24 feet alongside; deck height, 7.5 feet; 36,000 square feet of covered storage; receipt and shipment of containerized and roll-on/roll-off general cargo; operated by Miami-Dade County Seaport Department.

(363) **Port of Miami, Roll-on/Roll-off Berth 155** (25°46'10"N., 80°09'58"W.): 550-foot face; 21 feet alongside; deck height, 7.5 feet; container storage area in rear; receipt and shipment of containerized and roll-on/roll-off general cargo; operated by Miami-Dade County Seaport Department.

(364) **Port of Miami, Roll-on/Roll-off Bays 160 to 177** (25°46'16"N., 80°10'18"W.): 1,661-foot face; 23 to 24 feet alongside; deck height, 7.5 feet; container storage area in rear; 73,500 square feet of covered storage; receipt and shipment of containerized and roll-on/roll-off general cargo; mooring harbor tugs; operated by Miami-Dade County Seaport Department and Coastal Tug & Barge, Inc., a subsidiary of The Coastal Corp.

(365) **Port of Miami, Passenger Terminal No. 12 (Bays 183 to 195)** (25°46'26"N., 80°10'34"W.): 1,450-foot face; 23 feet alongside; deck height, 10 feet; receipt and shipment of roll-on/roll-off general cargo; mooring cruise vessels and other floating equipment; boarding passengers; operated by Miami-Dade County Seaport Department.

(366) **Coastal Fuels Marketing, Fisher Island Terminal Dock and Slip** (25°45'50"N., 80°08'31"W.): 800-foot face; 36 feet alongside; deck height, 6 feet; pipelines extend from wharf to storage tanks with 667,190 barrel capacity; receipt and shipment of petroleum products; fueling vessels; mooring company-owned floating equipment; and occasional landing for vehicular and passenger ferry; owned by Coastal Fuels Marketing, Inc., and operated by Coastal Fuels Marketing, Inc., a subsidiary of The Coastal Corp. and Fisher Island Holdings, LLC.

(367) **Supplies** of all kinds in any quantity can be obtained, and all types of marine services are available in Miami. Freshwater is piped to most berths. Fuel oil and diesel oil are available at the oil terminals and by tank barge or truck; most vessels bunker by barge while alongside.

### Repairs

(368) There are no major repair facilities for large vessels in Miami. The nearest major repair facilities are at Jacksonville and Tampa. There are six heavy-lift, traveling, container cranes, lift capacity to 50 tons at Port Everglades and there are no facilities available for drydocking or hauling-out deep-draft vessels.

(369) Marine repair firms along the Miami River offer a wide range of services, including construction, repair, and conversions to small coastal and inter-island vessels. The largest marine railway is capable of hauling out vessels up to 500 tons; the largest vertical boat lift is capable of hauling out vessels up to 500 tons and 130 feet. The largest shaft machined in the port is 36 feet by 90 inches. Cranes up to 200 tons are available.

(370) Several machine, electrical, electronic, and marine engine firms located off the waterfront can make above-the-waterline repairs to vessels berthed at the port.

### Communications

(371) Considerable ocean shipping calls at the port, and a large number of cruise ships operate from the port the year round.

(372) Local and interstate bus and truck lines operate over the excellent highways and freeways to and in the city and numerous domestic and overseas airlines serve the port through the Miami International Airport west of Miami.

## Chart 11467

(373) **Miami River** trends westward then northwestward through the heart of the city of Miami for about 2.8 miles to the confluence of **South Fork Miami River** and **North Fork Miami River.** North Fork leads northwest for another 0.6 mile to the junction with **Miami Canal**, thence Miami Canal continues northwest for about 1.8 miles to a dam below the NW 36th Street bridge. Miami Canal is reported to be navigable for small boats for about 10 miles above the dam, however, the head of navigation from seaward is at the dam. Tamiami Canal leads westward from Miami Canal to **Sweetwater** in the Everglades. A dam is about 1.2 miles above its junction with Miami Canal.

(374) In 2000-2010, the midchannel controlling depth was 9 feet from the mouth of the Miami River to the junction with South Fork and North Fork, thence 8.2 feet in North Fork and Miami Canal to the junction with Tamiami Canal, thence 7.5 feet to about 230 yards below the head of navigation at the dam, thence 2.8 feet to the dam. In 1984, the South Fork had depths of 10 feet at

the entrance to 4 feet at a fixed bridge about 0.3 mile above the mouth.

(375) Miami River and Tamiami Canal are **Regulated Navigation Areas**. (See **165.1 through 165.13, and 165.726**, chapter 2, for limits and regulations.)

(376) The Coast Guard reports that ships may encounter current anomalies at the mouth of Miami River which have caused occasional groundings. Currents in the river are strong on the ebb and cause swirls at the bends.

(377) The minimum clearance of the 10 drawbridges crossing Miami River and Miami Canal from the mouth to the head of navigation at the dam about 5 miles above the mouth is 6 feet. (See **117.1 through 117.59, 117.305, and 117.307**, chapter 2, for drawbridge regulations.) The drawbridges over Miami River from NW. 5th Street through NW. 22nd Avenue may at times be closed to marine traffic because of special events being held at the Orange Bowl. Advance notice of such closures will be published in the Local Notice to Mariners. The bridgetender monitors VHF-FM channels 13 and 16.

(378) A fixed people-mover bridge with a clearance of 75 feet crosses the river 0.25 mile above the mouth. The Miami Avenue bascule bridge with a clearance of 21 feet crosses the river about 0.3 mile above the mouth. A fixed railroad bridge with a clearance of 75 feet crosses the river 0.4 mile above the mouth. The triple fixed spans of Interstate Route 95 bridge cross the river 0.7 mile above the mouth; the vertical clearance is 75 feet. Another fixed highway bridge, 2.1 miles above the mouth, has a clearance of 75 feet.

(379) A highway bascule bridge with a reported 35-foot span and a clearance of 6 feet crosses the Tamiami Canal just above its junction with Miami River. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.)

(380) The river and canals are important parts of the Miami waterfront, for both commercial and pleasure craft. There are commercial wharves, yacht basins, marine repair plants, and oil-terminal wharves on the banks of Miami River and Miami Canal to just above the railroad bridge about 0.2 mile below the dam. The principal wharves can accommodate any vessel able to enter the river.

## Charts 11468, 11467

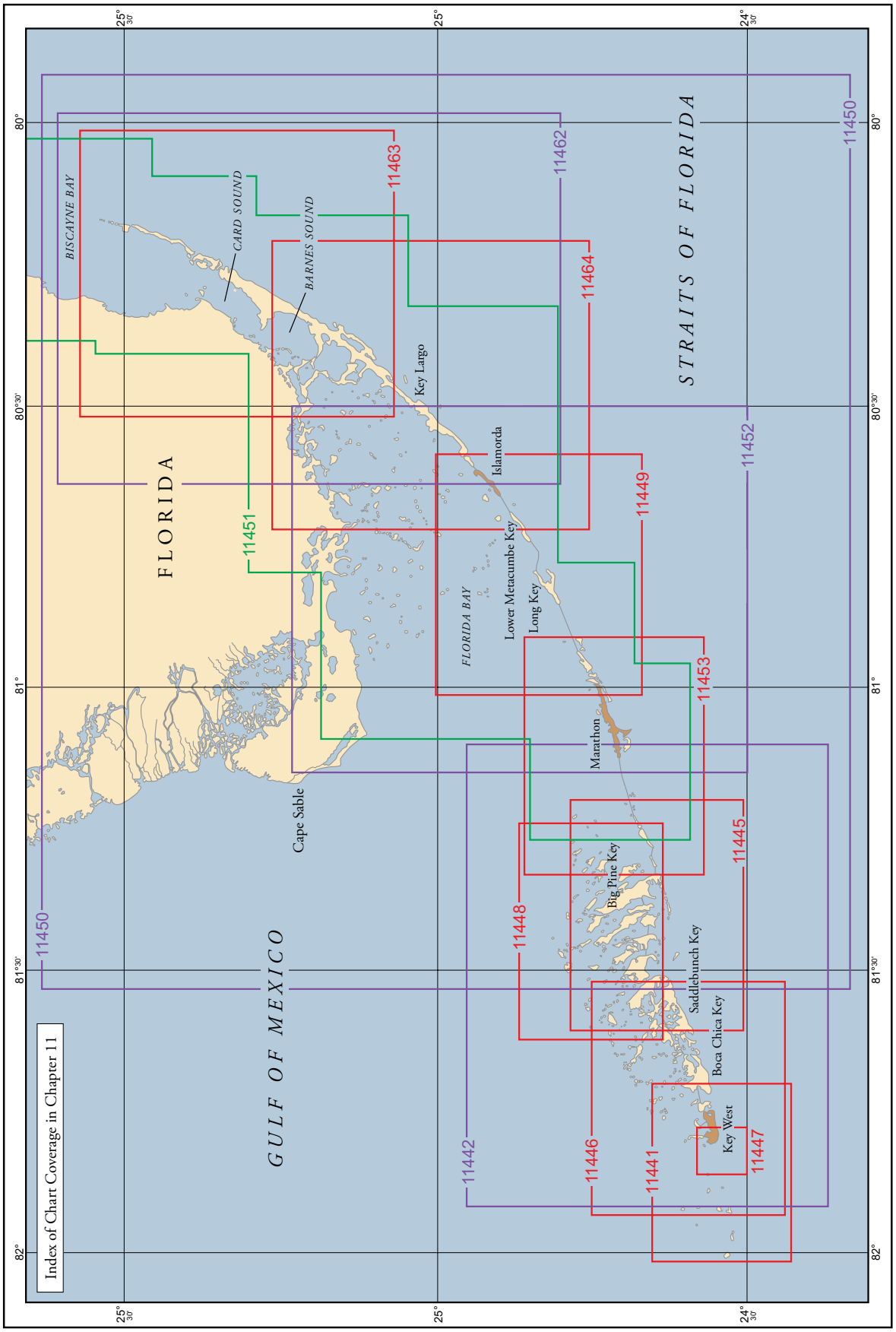
(381) Small-craft facilities are distributed along the east and west shores of Biscayne Bay from above Baker Haulover Inlet to Dinner Key, on Miami River, and on Tamiami and Miami Canals. Marine railways, lifts, and launching ramps are available. Gasoline, diesel fuel, freshwater, ice, berthing with electricity, marine hardware, provisions, and telephone services are available about the harbor. Hull, engine, and electronic repairs can be made. There are many large hotels, motels, tourist homes, and restaurants. (For details on facilities, channel depths, bridges, etc., between Bakers Haulover Inlet and Miami Harbor Channel, see chapter 12.)

(382) During the winter tourist season, when berthing space is at a premium, many craft have to anchor in the bay off the facilities. There are dockmasters at most of them to advise and assist in finding a secure berth. Many of the large hotels at Miami Beach have their own docks.

(383) The **City of Miami Miamarina** is at the northeast corner of **Bay Front Park,** which extends from the Dodge Island Causeway southward to Miami River and fronts on Biscayne Boulevard. The marina caters to private, commercial and sightseeing vessels. The facility has over 200 slips accommodating craft to 150 feet. Water, electricity, laundromat, and telephones are available. U.S. Customs and U.S. Department of Agriculture officials are on call at the dockmaster's office; they also handle immigration and U.S. Public Health Service matters. In 1983, depths of 10 feet were reported in the approach with 9 feet in the basin. The **dockmaster's** office, at the marina, is manned 24 hours a day.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11488 | Fernandina Beach, Amelia River | 30°41'N/81°28'W | 6.6 | 6.2 | 0.2 |
| 11488 | Nassauville, Nassau River | 30°34'N/81°31'W | 5.2 | 4.9 | 0.2 |
| 11488 | Jacksonville, Long Branch, St. Johns River | 30°22'N/81°37'W | 2.7 | 2.6 | 0.1 |
| 11488 | Jacksonville Beach, ocean | 30°17'N/81°23'W | 5.6 | 5.2 | 0.2 |
| 11488 | Oak Landing, ICWW | 30°15'N/81°26'W | 4.4 | 4.2 | 0.2 |
| 11485 | St. Augustine, City Dock, Matanzas River | 29°54'N/81°19'W | 5.0 | 4.7 | 0.2 |
| 11485 | Vilano Beach, inside, Tolomato River | 29°55'N/81°18'W | 5.0 | 4.7 | 0.2 |
| 11485 | St. Augustine Beach | 29°51'N/81°16'W | 5.2 | 4.8 | 0.2 |
| 11485 | Smith Creek, Flagler Beach | 29°29'N/81°08'W | 1.1 | 0.9 | 0.1 |
| 11485 | Ormond Beach, Halifax River | 29°17'N/81°03'W | 0.8 | 0.7 | 0.1 |
| 11485 | Daytona Beach Shores, Sunglow Pier | 29°09'N/80°58'W | 4.4 | 4.1 | 0.2 |
| 11478 | Port Canaveral entrance | 28°25'N/80°36'W | 4.2 | 3.8 | 0.2 |
| 11485 | Halifax River, Ponce Inlet | 29°05'N/80°56'W | 3.2 | 2.9 | 0.1 |
| 11485 | Ponce de Leon Inlet (south) | 29°04'N/80°55'W | 3.2 | 2.9 | 0.1 |
| 11485 | Fort Matanzas, Matanzas River (ICWW) | 29°43'N/81°14'W | 4.3 | 4.0 | 0.2 |
| 11478 | Cape Canaveral (Canaveral Harbor) | 28°26'N/80°34'W | 3.8 | 3.7 | 0.2 |
| 11474 | Vero Beach (ocean) | 27°40'N/80°22'W | 3.9 | 3.6 | 0.2 |
| 11474 | Stuart, St. Lucie River | 27°12'N/80°16'W | 1.1 | 1.0 | 0.1 |
| 11474 | Jupiter Inlet, south jetty | 26°57'N/80°04'W | 2.8 | 2.7 | 0.2 |
| 11475 | Fort Pierce Inlet (S. Jetty), (superseded) | 27°28'N/80°17'W | 3.0 | 2.8 | 0.2 |
| 11475 | Fort Pierce (inside), Indian River | 27°27'N/80°19'W | 1.5 | 1.4 | 0.2 |
| 11466 | Port of Palm Beach, Lake Worth | 26°46'N/80°03'W | 3.1 | 2.9 | 0.2 |
| 11466 | Lake Worth Pier, ocean | 26°37'N/80°02'W | 3.0 | 2.9 | 0.1 |
| 11467 | Hillsboro Inlet (CG station) | 26°16'N/80°05'W | 2.8 | 2.6 | 0.2 |
| 11470 | Port Everglades, Turning Basin | 26°06'N/80°07'W | 2.8 | 2.7 | 0.2 |
| 11468 | Miami Harbor entrance, ocean pier | 25°46'N/80°08'W | 2.7 | 2.6 | 0.2 |
| 11470 | Bahia Mar Yacht Club, Ft. Lauderdale, New River | 26°07'N/80°07'W | 2.7 | 2.6 | 0.2 |
| 11470 | South Port Everglades, ICWW | 26°05'N/80°07'W | 2.8 | 2.7 | 0.2 |
| 11470 | Port Laudania, Dania cut-off Canal | 26°04'N/80°08'W | 2.6 | 2.5 | 0.2 |
| 11467 | Palm Beach, Lake Worth | 26°44'N/80°03'W | 3.1 | 2.9 | 0.2 |
| 11467 | Palm Beach, Hwy. 704 bridge, Lake Worth | 26°42'N/80°03'W | 2.9 | 2.7 | 0.1 |
| 11467 | West Palm Beach, Canal, Lake Worth | 26°39'N/80°03'W | 2.8 | 2.6 | 0.2 |
| 11467 | Lake Worth Pier, ocean | 26°37'N/80°02'W | 3.0 | 2.9 | 0.1 |
| 11467 | Boynton Beach, Lake Worth | 26°33'N/80°03'W | 2.8 | 2.6 | 0.1 |
| 11467 | Delray Beach, ICWW | 26°28'N/80°04'W | 2.8 | 2.6 | 0.2 |
| 11467 | South Delray Beach, ICWW | 26°27'N/80°04'W | 2.7 | 2.6 | 0.2 |
| 11467 | Yamato, ICWW | 26°24'N/80°04'W | 2.6 | 2.5 | 0.2 |
| 11467 | Lake Wyman, ICWW | 26°22'N/80°04'W | 2.5 | 2.5 | 0.2 |
| 11467 | Whiskey Creek, south entrance, ICWW | 26°03'N/80°07'W | 2.5 | 2.4 | 0.2 |
| 11467 | Dumfoundling Bay | 25°57'N/80°08'W | 2.2 | 2.2 | 0.1 |
| 11467 | North Miami Beach, Newport Fishing Pier | 25°56'N/80°07'W | 2.8 | 2.6 | 0.2 |
| 11467 | Haulover Pier, N. Miami Beach | 25°54'N/80°07'W | 2.7 | 2.6 | 0.1 |
| 11468 | Miami Miamarina, Biscayne Bay | 25°47'N/80°11'W | 2.4 | 2.3 | 0.1 |
| 11467 | Biscayne Creek, ICWW | 25°53N/80°10'W | 2.4 | 2.3 | 0.1 |
| 11467 | Lake Worth ICWW, Lake Worth | 26°37'N/80°03'W | 3.1 | 2.9 | 0.1 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011


Index of Chart Coverage in Chapter 11
FLORIDA
GULF OF MEXICO
STRAITS OF FLORIDA
BISCAYNE BAY
CARD SOUND
BARNES SOUND
FLORIDA BAY
Key Largo
Islamorda
Lower Metacumbe Key
Long Key
Marathon
Big Pine Key
Saddlebunch Key
Boca Chica Key
Key West
Cape Sable
11441
11442
11445
11446
11447
11448
11449
11450
11451
11452
11453
11462
11463
11464
25° 30'
25°
24° 30'
80°
80°30'
81°
81°30'
82°

# Miami to Key West

(1) This chapter describes the Florida Keys and the various passages that lead through it from the Straits of Florida and Hawk Channel to Florida Bay and the Gulf of Mexico. Also discussed are Key West Harbor and the small-craft basins at Key West, Boot Key Harbor, Safe Harbor, and several other small-craft harbors along the Florida Keys.

(2) Strangers using Hawk Channel and the various passages through the Florida Keys can obtain the services of fishing boat captains and other qualified charter-boat captains at Miami or Key West who will act as **pilots** or **guides.**

### COLREGS Demarcation Lines

(3) The lines established for this part of the coast are described in **80.735 and 80.740**, chapter 2.

### Weather

(4) Tropical cyclones are the greatest weather hazard to navigation in this area. While they can form in any month they are most likely during August, September and October. Some of the greatest hurricanes on record have moved through this area. Often considered the most devastating, was the Labor Day Hurricane that struck the Florida Keys in 1935. Winds were calculated to be 175 to 215 knots. Near Lower Matecumbe Key (Craig) a pressure of 892.3mb was measured; the lowest ever in a North Atlantic hurricane. Storm tides were estimated to have exceeded 18 feet (5.5 m) above mean sea level. Donna (1960) and Betsy (1965) were other severe hurricanes that wreaked havoc in the Keys. For more detail see Key West.

(5) This area lies close to the northern boundary of the trade winds in winter but in the heart of this system in summer. Therefore easterlies and northeasterlies are persistent throughout the year. They are occasionally interrupted by winter cold fronts, easterly waves and tropical cyclones. Local effects also come into play near the Keys. The trades usually blow at 10 to 20 knots but can strengthen at times. While gales are infrequent, winds of 22 knots or more blow about 7 to 12 percent of the time from October through March. In the Straits of Florida, October and November trade winds are persistent and intense, averaging around 15 knots. From fall through spring, waves of 10 feet (3 m) or more are reported 1 to 3 percent of the time.

(6) The nearness of the Gulf Stream and the tempering effects of the Gulf of Mexico produce a tropical maritime climate in which average winter temperatures are only 12° to 15°F (6.7° to 8.4°C) cooler than summer averages. Cold fronts are usually modified even if they reach the Keys. Just south of Miami there are about 10 to 12 days on the average when minimums drop below 40°F (4.4°C). June through October is generally considered the rainy season and most of this falls as showers and thunderstorms. Particularly heavy amounts fall in conjunction with easterly waves or more organized tropical cyclones. In winter, cold fronts may bring rain. Visibilities are usually good but may be reduced briefly in showers.

## Chart 11460

(7) The **Florida Keys** consist of a remarkable chain of low islands, beginning with Virginia Key and extending in a circular sweep to Loggerhead Key, a distance of about 192 miles. For some 100 miles of that distance they skirt the southeast coast of the Florida Peninsula, from which they are separated by shallow bodies of water known as Biscayne Bay, Card Sound, Barnes Sound, Blackwater Sound, and Florida Bay. Biscayne Bay has depths of 9 to 10 feet for most of its length, and the other bodies of water are shallow, containing small keys and shoals, and of no commercial importance except as a cruising ground for small boats. Westward of Florida Bay the Florida Keys separate the **Straits of Florida** from the Gulf of Mexico.

(8) The keys are mostly of coral formation, low, and generally covered with dense mangrove growth, though some are wooded with pine, and on a few are groves of coconut trees. Most of the keys that are connected by U.S. Highway 1 to Key West are inhabited. Key West is the most important of the keys. **Florida Keys National Marine Sanctuary**, a Marine Protected Area (MPA), surrounds the keys from Biscayne Bay to Dry Tortugas.

(9) The openings under the viaduct and bridges are indicated on the charts. Drawbridges are over Channel Five, Jewfish Creek, and Moser Channel. Overhead power cables run parallel to U.S. Highway 1 from Tavernier to Big Coppitt Key. All clearances are greater than those of the adjacent fixed bridges. Cables are submerged at the movable spans of drawbridges. Small craft with local knowledge use these channels to go from the Straits of Florida to Florida Bay and the Gulf of Mexico. Strangers should not attempt passage without a pilot or guide.

(10) The tidal currents are strong through the openings between the keys. Wind effects may at times be expected

to modify the velocities shown in the tidal current tables.

(11) The Florida Keys are skirted on the side next to the straits throughout their extent by the **Florida Reefs,** a chain of dangerous reefs and shoals lying at an average distance of about 5 miles from the line of keys. The reefs are hazardous because they are not marked by breakers in smooth weather and only a few show above the water. On the outer edge of and between the reefs the water shoals abruptly.

(12) In the seaward approach to the reefs, warning of their proximity usually will be given by the difference in color of the water, from deep blue to light green, or by the **Bank Blink,** described in chapter 3. Too much reliance in these warnings, however, may lead to trouble. In clear weather the lights and daybeacons make navigation along the reefs easy, but in thick weather soundings should be relied upon for safety. Fifty-fathom soundings indicate a distance of 2 to 3 miles from the reefs, and great caution should be used in approaching them closer. Fog is not frequent in this locality.

(13) The water always becomes milky following windy weather. The usual color of the water on the reefs is bluish green, and the shoal patches show dark, shading through brown to yellow as they approach the surface. The shoal sand patches show as a bright green. At depths of 10 to 15 feet grass patches on the bottom look quite similar to rocks. When piloting in this area choose a time so that the Sun will be astern, conning the vessel from aloft or from an elevated position forward, for then the line of demarcation between deep water and edges of the shoal will be indicated with surprising clarity.

(14) The **Florida Keys Particularly Sensitive Sea Area (PSSA)** is an IMO-designated zone that encircles the sea area around all of the Florida Keys. The PSSA includes the entire Florida Keys National Marine Sanctuary as well as Biscayne National Park at the northeastern end of the Keys. The PSSA has been established to protect the exceptional values of the sea area around the Florida Keys from possible damage by international shipping activities. The PSSA includes the Tortugas Ecological Reserve, which was established in 2001 to protect nearly pristine coral formations and habitat in the Sanctuary. The coral resources within the Reserve are especially vulnerable to possible damage from shipping activities.

(15) Domestic law and regulations adopted by the United States for the Sanctuary apply within the PSSA. Several of these concern shipping activities:

(16) (1) **Areas To Be Avoided (ATBAs)** – There are four ATBAs in the Sanctuary: in the vicinity of the Florida Keys; in the vicinity of Key West Harbor; in an area surrounding the Marquesas Islands; and in an area surrounding the Dry Tortugas Islands. All tank vessels and vessels greater than 50 meters in registered length are prohibited from operating within the ATBAs. The ATBAs are described and the coordinates are provided in Chapter 3.

(17) (2) **Areas closed to anchoring** – All vessels are prohibited from anchoring in the Tortugas Ecological Reserve. Vessels that are 100 feet or less in length (30.48 meters) may request permission from the Sanctuary to use mooring buoys in the northern portion of the Reserve (Tortugas North). Vessels 50 meters or greater in registered length are prohibited from anchoring on the portion of Tortugas Bank west of Dry Tortugas National Park. (This area was modified in January 2001 by the establishment of the Tortugas Ecological Reserve.)

(18) (3) **Anchoring restriction** – In areas of the Sanctuary identified as Ecological Reserves and Sanctuary Preservation Areas all anchor apparatus (including the anchor, chain, or rope) must not touch any coral, living or dead, or any attached organism. In all other areas of the Sanctuary, vessels are prohibited from anchoring on living coral in water depths of less than 40 feet when visibility is such that the seabed can be seen.

(19) (4) **Restricted access** – Vessels are not allowed to stop in the southern portion of the Tortugas Ecological Reserve (Tortugas South) and must receive permission in advance in order to stop in the northern portion of the Reserve (Tortugas North).

(20) (5) **Discharge restriction** – In Ecological Reserves and Sanctuary Preservation Areas, all discharges and deposits are prohibited except cooling water or engine exhaust.

(21) Additional restrictions on vessel activities, such as vessel discharges, apply within the Sanctuary. (See **15 CFR 922**, chapter 2, for limits and regulations) for the Sanctuary, including the coordinates of ATBAs, Ecological Reserves and Sanctuary Preservation Areas.

### Prominent features

(22) The outer part of the Florida Reefs is marked by lights from Miami to Key West. Several lights marking the Hawk Channel are also visible from seaward. In addition, several lighted radio towers and microwave towers along the keys and the aerolights at Marathon Airstrip, on Boca Chica Key and at the **Key West International Airport** are prominent.

### Dangers

(23) Vessels proceeding through the channels inside the Florida Reefs should exercise extreme caution because of the numerous rocks, shoals, wrecks, and pile structures which exist. The chart should be examined carefully to determine the position of these dangerous obstructions so they may be avoided.

(24) **Hawk Channel** is the navigable passage inside Florida Reefs and outside the keys from Cape Florida to Key West, a distance of about 127 miles. It varies in depth from 9 to 34 feet, and is 0.25 mile wide at its narrowest part. Light-draft vessels, bound southward and westward, may use this channel with great advantage, avoiding entirely the adverse current of the Gulf Stream and finding comparatively smooth water in all winds, except when passing the large openings between the

reefs in southerly winds. These openings are principally between Alligator Reef Light and American Shoal Light. Power-driven vessels or sailing vessels with a following wind may run the courses through this channel without difficulty. Sailing vessels drawing more than 7 feet are advised not to try to beat through without a pilot or guide.

(25) Reports indicate that the current in Hawk Channel usually sets fair with the channel, except alongside the open area between Hawk Channel and Biscayne Bay where a fairly strong cross current exists, particularly on an ebb tide. Possible cross currents should be guarded against, especially in the vicinity of the openings between the keys.

(26) Local fishing-boat and charter-boat captains who will act as pilots or guides are generally available at Miami or Key West. The channel is marked with lights, lighted buoys, daybeacons, and buoys. However, strangers should not attempt passage at night without local knowledge. Vessels may anchor at night where the bottom is soft. Known anchorages are discussed in a later section. The holding ground is poor where the bottom is hard. Tows and other small vessels use the channel.

(27) The **Intracoastal Waterway** between Miami and Key West is described in chapter 12. This waterway on the western and northern side of the keys passes southward through Biscayne Bay, Card, Barnes, and Blackwater Sounds and connecting waterways in Florida Bay to Moser Channel. From there it is necessary to pass either through Moser Channel and proceed to Key West via Hawk Channel, a distance of 40 miles, or to remain on the northern side of the keys and proceed to Key West via Big Spanish Channel and the Gulf of Mexico, a distance of 54 miles. The waterway route is through smooth waters, except in Hawk Channel and the Gulf of Mexico.

(28) **Florida Bay,** northward of the Florida Keys and southward of the mainland of Florida, is a triangular body of water extending in a general east-and-west direction from Barnes Sound to Cape Sable. The depths are shallow and irregular, and the bottom is mostly coral with a thin covering of silt in the eastern part. From April to October the waters of the bay are clear and the shoals plainly discernible, but during the winter the water is frequently milky and the shoals indistinguishable.

(29) In the eastern part of the bay are numerous ridges and reefs which show bare or nearly bare. Numerous small wooded keys dot the area. Only small craft can navigate this part of the bay which is frequented by small motor yachts, crab and lobster fishermen, and other fishing craft. The western part of the bay is comparatively clear, with depths ranging from 7 to 13 feet. Many charted shoal areas with lesser depths are scattered throughout this part of the bay; the chart is the best guide. The bottom is covered with basket sponges and small coral heads.

(30) A protected area of the **Everglades National Park** is in the northern part of Florida Bay. Landing on the beaches or keys of this area without the authorization of the Superintendent of the Everglades National Park is **prohibited**, except on those beaches or keys marked by a sign denoting the area as being open. Everglades National Park is a Marine Protected Area.

(31) **Great White Heron National Wildlife Refuge** and **National Key Deer Refuge** extend through the northern part of the keys from near Vaca Key to Key West.

## Charts 11466, 11465, 11451

(32) **Norris Cut** is a shallow inlet just south of the Main Channel to Miami Harbor between Fisher Island and **Virginia Key**. A prominent stack and tanks are near the center of Virginia Key.

(33) **Key Biscayne** is connected to the mainland by a bridge-causeway which crosses Bear Cut, Virginia Key, and Biscayne Bay. The highway bridge over Bear Cut has a 48-foot fixed span with a clearance of 16 feet. A shoal, reported bare at mean high water, extends about 0.6 mile in a north-south direction about 0.2 mile off the eastern shore of Key Biscayne.

(34) An abandoned lighthouse is on **Cape Florida,** the southern point of Key Biscayne. Many tall apartment hotels on the easterly side of Key Biscayne are also prominent.

(35) **Biscayne Channel** leads through the shoals south of Cape Florida into Biscayne Bay. It is partially dredged, but the channel has shoaled. The channel is marked by lights and daybeacons. Craft whose draft is close to the limiting depth of the channel should exercise extreme caution in navigating it. Several channels leading through the shoals between Biscayne Channel and Key Biscayne are used by local boats.

(36) **Cape Florida Anchorage,** with depths of 12 to 20 feet, is about 300 yards westward of the south end of Cape Florida with the lighthouse tower bearing northward of 069°. This is a poor anchorage with southerly winds.

(37) **Miami South Channel** is a dredged cut leading from Biscayne Bay, westward of Virginia Key, to the Miami waterfront. One branch of it leads into the Miami River, and the other leads directly to the basin off **Bay Front Park.** The Intracoastal Waterway southward to Key West passes through Miami South Channel. Clearance of the Rickenbacker Causeway bridge is given in chapter 12.

(38) **Fowey Rocks Light** (25°35'26"N., 80°05'48"W.), 110 feet above the water, is shown from a brown, octagonal, pyramidal skeleton tower on pile foundation enclosing a white dwelling and stair cylinder; a racon is at the light. A fish haven, covered 65 feet, is about 2.1 miles north-northeastward of the light in about 25°37'24"N., 80°04'54"W.

(39) **Fowey Rocks Anchorage**, 1.3 miles westward of Fowey Rocks Light and unprotected from southerly winds, can be used by vessels drawing 14 feet or less.

## Charts 11462, 11465, 11463, 11464, 11451

(40) **Bowles Bank Anchorage**, 6.5 miles south-southwestward of Fowey Rocks Light (25°35'26"N., 80°05'48"W.), is fair in all but southerly winds. It has depths of 14 to 16 feet and soft bottom in places, and lies about 0.5 mile north of the light of Bache Shoal and eastward of the north end of **Elliott Key.**

(41) **Legare Anchorage,** 7 miles southward of Fowey Rocks Light, lies between the reefs westward of **Triumph Reef**. The bottom is mostly hard, but there are some soft spots on which vessels may anchor. The entrances are not marked, and the anchorage is not generally used.

(42) **Caesar Creek Bank Anchorage**, 12 miles south-southwestward of Fowey Rocks Light, is fair in all but southerly winds. It lies on the west side of Hawk Channel between **Margot Fish Shoal** and **Caesar Creek Bank,** with depths of 10 to 12 feet, soft bottom.

(43) Excellent anchorage for small craft will be found in **Caesar Creek,** just north of Caesar Creek Bank. The entrance is marked by a light, and private daybeacons mark the channel. There was a reported depth of 6 feet through the entrance channel in 1983.

(44) There is also a secure anchorage between **Adams Key**, **Meigs Key**, and **Elliott Key**. In 1983, it was reported that with local knowledge a draft of 4 feet could be carried into Biscayne Bay through a privately marked channel which leads north along the west side of Adams Key.

(45) **Pacific Reef,** 13.4 miles southward of Fowey Rocks Light, is marked by **Pacific Reef Light** (25°22'16"N., 80°08'31"W.), 44 feet above the water and shown from a black skeleton tower on piles. A channel, marked by daybeacons, leads from the ocean 0.6 mile southward of Pacific Reef Light to Caesar Creek; the reported controlling depth was 8 feet in 1983.

(46) In 1984, a sunken wreck was reported in Hawk Channel about 0.3 mile northwest of Turtle Harbor West Shoal Daybeacon 2 in about 25°19.5'N., 80°13.0'W.

(47) **Angelfish Creek,** 17.5 miles southwestward of Fowey Rocks Light, is used by vessels proceeding to Card Sound and the Intracoastal Waterway. The reported controlling depth through the creek was 5 feet in 1983. The channel is marked by lights and daybeacons. The outer end of the creek offers good protection, but the bottom is rock ledge and the anchor should be buoyed.

(48) **Ocean Reef Harbor** is on the east side of **Key Largo,** 19.5 miles southwestward of Fowey Rocks Light. A privately dredged channel leads to the harbor. In 1979, the centerline controlling depth in the channel was 7 feet. The entrance channel is marked by a light and private daybeacons. The harbor has good anchorage. A private yacht club is on the north side of the harbor.

(49) In 1992, an obstruction was reported 0.6 mile east-southeastward of the entrance channel in about 25°18'19.4"N., 80°15'35.2"W.

(50) A privately dredged channel, about 0.4 mile northward of the entrance to Ocean Reef Harbor, leads to a residential area. The channel, marked by private daybeacons, had a centerline controlling depth of 7 feet in 1979.

(51) **Key Largo Anchorage,** 20 miles southwestward of Fowey Rocks Light, is fair in all but southerly winds. It has a depth of 14 feet, soft bottom, 4.5 miles northwestward of Carysfort Reef Light.

(52) **Turtle Harbor,** a well-sheltered anchorage between the reefs lying northwestward of Carysfort Reef Light, is one of the better offshore anchorages between Key West and Miami, and is protected from all but northeast winds. It is entered from the Straits of Florida by a marked passage 5 miles northeastward of the light. Vessels of 15-foot draft can use this passage in smooth water. Depths in the approach range from 27 to 38 feet, and at the anchorage from 25 to 28 feet. In 1980, a submerged pile was reported in the north end of the anchorage about 0.2 mile southwest of Turtle Harbor Daybeacon 6. Vessels can enter Hawk Channel from this harbor by proceeding about 1.3 miles south-southwestward of Daybeacon 6 and then taking a westerly course.

(53) **Carysfort Reef Light** (25°13'19"N., 80°12'41"W.), 100 feet above the water, is shown from a brown, octagonal, pyramidal skeleton tower on pile foundation, enclosing a conical dwelling and stair cylinder.

(54) **The Elbow** is a reef, 5.3 miles southwestward of Carysfort Reef Light, on which several wrecks have occurred. It is marked on its seaward edge by a light.

(55) **Molasses Reef,** 15.5 miles southwestward of Carysfort Reef Light, is marked by a light. The entrance to **Molasses Reef Channel,** which has a controlling depth of about 8 feet, is just south of the light. The shoalest part of the channel is marked by daybeacons. A **no anchorage area**, marked by private buoys, has been established on Molasses Reef.

(56) **Biscayne National Park** extends south from Cape Florida for about 19.5 miles to Angelfish Creek and comprises Biscayne Bay and the offshore reef areas northeast and east of Elliott Key. Regulations are available from the park ranger station at Elliott Key Harbor or from the park headquarters on the west side of Biscayne Bay at Homestead. Gasoline and a launching ramp are available at the headquarters. The mailing address is Biscayne National Park, Post Office Box 1369, Homestead, Fla. 33030. Biscayne National Park is a Marine Protected Area (MPA).

(57) The **John Pennekamp Coral Reef State Park** comprises the offshore reef area from the vicinity of Angelfish Creek to near Molasses Reef. The area has been established for the protection of the coral reef formation and its associated marine life. Regulations for the preserve are available at the park headquarters on the southwest side of Largo Sound.

(58) **Key Largo Management Area** (**Key Largo National Marine Sanctuary**), 20 miles long, extends to seaward about 8 miles from the John Pennekamp Coral Reef

State Park. The area has been established for the protection of the coral reef formation and its associated marine life. Sanctuary regulations include prohibitions against spearfishing, anchoring in the coral, breaking or removing coral, or otherwise damaging the fragile habitats found within the Sanctuary. The Sanctuary seeks to minimize reef damage by educating the public and providing alternatives to anchoring. The mooring buoy system now established in the Sanctuary is intended to alleviate the problem of anchor damage to coral reefs. (See **15 CFR 922,** chapter 2, for limits and regulations.)

(59) **El Radabob Key,** locally known as **Julia Island,** is an island westward of The Elbow, about 10 miles southwestward of Carysfort Reef Light. It is about 5 miles long and 0.5 miles wide, and in general is covered with dense mangrove growth. The island is separated from Key Largo on the west by Largo Sound, South Sound Creek and North Sound Creek.

(60) **Largo Sound**, between El Radabob Key and Key Largo, is about 1.8 miles long and 0.8 mile wide, and is entered southward of El Radabob Key. General depths in the sound are from 1 to 6 feet. A dredged channel leads from Hawk Channel through **South Sound Creek** thence 0.3 mile into the sound. The channel is well marked by lights and daybeacons. In 1986, the centerline controlling depth was 5½ feet, and in 1983, a reported depth of 4 feet could be carried to the headquarters of the Florida Board of Parks on the south side of the sound. Mariners are advised to stay well to the center of the channel as the sides are composed of coral rock, and the bends are sharp. The entrance is difficult and narrow, and fills with southerly winds.

(61) **Marvin D. Adams (Key Largo) Waterway**, another dredged channel, enters the west side of Largo Sound from Blackwater Sound. The waterway is marked at each end by a light. In 1986, the centerline controlling depth was 3½ feet. The waterway is crossed by 32-foot twin fixed highway spans of U.S. Route 1 and an overhead pipeline. The spans each have a clearance of 14 feet. A State park marina on the west side has berths, electricity, launching ramp, pump-out station, water and ice available.

(62) A narrow unmarked channel leads northwestward from about 1 mile above the mouth of South Sound Creek to an unnamed bay. An island in the middle of the bay is connected to the mainland by a causeway bridge; bridge clearance is not known. Gasoline is available at a camper resort on the west side of the bay about 0.2 mile southwestward of the bridge.

(63) Several small-craft facilities are at the town of **Key Largo,** about 1 mile southwestward of the south end of El Radabob Key. Berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, a pump-out station, and a mobile lift are available; hull, engine and electrical repairs can be made.

(64) **Rock Harbor,** about 3 miles southwestward of El Radabob Key and 5.7 miles northwestward of the light on Molasses Reef, has small-craft facilities where gasoline, water, and ice can be obtained. Also available are berths with electricity, launching ramps, repairs, and a 5-ton fixed lift.

(65) **Tavernier,** about 5 miles southwestward of Rock Harbor and 20 miles southwestward of Carysfort Reef Light, is one of the larger settlements on the Florida Keys. A channel, marked by a light and daybeacons, leads to Tavernier Harbor from Hawk Channel. A fixed highway bridge with a clearance of 15 feet crosses Tavernier Creek. In 1991, a fixed highway bridge with a design clearance of 15 feet was under construction immediately north of the existing bridge. Gasoline, supplies, motels, and charter party fishing boats are available. The small-craft facilities on the bay side at Tavernier and in Tavernier Creek are described with the Intracoastal Waterway, chapter 12.

(66) **Tavernier Key Anchorage** is 2 miles eastward of Tavernier. Anchor according to draft from northward to eastward of Tavernier Key, hard bottom.

## Charts 11452, 11449, 11451

(67) **Alligator Reef Light** (24°51'06"N., 80°37'08"W.), 136 feet above the water, is shown from a white, octagonal pyramidal skeleton tower with black top, on pile foundation, enclosing a square dwelling and stair cylinder.

(68) **Indian Key Channel,** northwestward of Alligator Reef Light, is about 200 yards wide and leads from the Straits of Florida east of **Lignumvitae Key** to Florida Bay. It is marked by daybeacons. In 1983, the reported controlling depth in this narrow channel was 6 feet. It was also reported that the channel has a tendency to deepen with westerly winds and fill in with southeasterly winds. Local knowledge is advised. The highway bridge across the channel has a fixed span with a clearance of 27 feet.

(69) **Channel Five,** 8.4 miles westward of Alligator Reef Light, is a natural channel that had a reported controlling depth of 7 feet in 1978. At times a strong current sets through the channel. The fixed highway bridge across the channel has a clearance of 65 feet. Vessels drawing up to three feet can follow the marked route leading westward and northwestward in Florida Bay to Cape Sable and Flamingo.

(70) **Flamingo,** on the north side of Florida Bay about 9 miles east of East Cape (25°07'N., 81°05'W.), is a visitors center in **Everglades National Park**. (See chart 11433 for Everglades National Park.) A 300-foot tower and an 86-foot standpipe about 0.3 mile northeast of the visitors center are prominent.

(71) A dredged channel leads from the bay to the entrance to **Buttonwood (Flamingo) Canal**. The reported controlling depth was 4½ feet in 1982. A dam blocks the canal about 200 yards above the entrance. Passage around the dam to allow vessels to proceed to Whitewater Bay is provided by boat ramps and by an 8-ton sling

hoist that can handle craft to 26 feet with 10-foot beam. A highway bridge about 0.5 mile above the entrance to the canal has a 45-foot fixed span with a clearance of 10 feet. A marina on the west side of the canal just below the dam at Flamingo has berths with electricity, water, ice, and limited marine supplies. Gasoline, diesel fuel, and launching ramps are available on either side of the dam. A 5 mph-no wake **speed limit** is enforced in the canal.

(72) **Tennessee Reef Light** (24°44'46"N., 80°46'56"W.), 49 feet above the water, is shown from a small black house on a hexagonal, pyramidal skeleton tower on piles, about 0.7 mile off the southwestern end of **Tennessee Reef.** A lighted buoy is about 5.6 miles northeast of the light.

(73) **Long Key Anchorage,** 3 miles north-northwestward of Tennessee Reef Light, has soft bottom in depths of 15 to 18 feet, but it is exposed to southerly winds.

(74) In 1982, a partially submerged steel beam was reported 2.8 miles northwest of Tennessee Reef Light in about 24°46.5'N., 80°49.3'W.

(75) **Turtle Shoal Anchorage,** 20 miles southwestward of Alligator Reef Light and 1 mile westward of **East Turtle Shoal Light 45** (24°43'29"N., 80°55'59"W.), 20 feet above the water, has a soft bottom in a depth of 27 feet. It is a fair anchorage in fine weather. **West Turtle Shoal** to the southwestward affords another anchorage area in depths of 24 to 36 feet about 1 mile to its westward. A 1-mile-square fish haven is immediately southward of West Turtle Shoal.

(76) A well-protected yacht basin and a marina are at **Duck Key,** about 3 miles north-northeastward of East Turtle Shoal Light 45. A private light and private daybeacons mark the channel entrance to Duck Key. In 1983, a reported depth of 10 feet could be carried to the yacht basin, thence 5 feet to the marina beyond. Berths, electricity, gasoline, diesel fuel, and water are available at the yacht basin and marina. A launching ramp, ice, and marine supplies are also available at the marina. Hotels and restaurants are nearby.

(77) **Valhalla** on **Crawl Key,** about 3 miles northwestward of East Turtle Shoal Light 45, has a private yacht club.

(78) **Key Colony Beach,** about 3 miles southwestward of Valhalla, is a protected harbor westward of **Fat Deer Key.** In 2000, the reported controlling depth was 9 feet in the entrance channel. The channel is marked by private daybeacons. Gasoline, diesel fuel, water, berthing with electricity, and a launching ramp are available.

(79) **Sister Creek,** about 3.8 miles southwestward of Key Colony Beach and 4 miles northeastward of Sombrero Key Light, is a narrow passage between **Boot Key** and **Vaca Key**. It connects Hawk Channel to the southward with Boot Key Harbor to the northward, and has several arms which provide secure refuge during heavy weather. Vessels tie to the mangroves. The entrance to the creek between **West Sister Rock** and **East Sister Rock** is marked by a light and daybeacons. Rocks awash extend well into the channel from the east side. In 1983, the reported controlling depth was 5 feet to Boot Key Harbor. A sunken wreck is about 300 yards southeastward of West Sister Rock.

(80) **Knight Key Anchorage,** northward of Sombrero Key Light, is good but exposed to southwesterly winds. To make this anchorage, bring Sombrero Key Light astern on a **352°** course and anchor in 6 to 12 feet, sticky bottom, about 0.6 mile southward of Knight Key.

(81) **Boot Key Harbor,** on the south side of the town of **Marathon,** is entered southward of **Knight Key** about 4.5 miles northward of Sombrero Key Light. The entrance channel is marked by a light and daybeacons; the color of the banks is also a good guide for the narrow entrance channel. Daybeacons also mark the channel through the harbor for a distance of about 1.5 miles. In 1983, the reported controlling depth was 7 feet, but shoaling was reported along the southerly side of the entrance channel; caution is advised. A highway bridge, over the channel at mile 0.13, has a bascule span with a clearance of 24 feet at the center. (See **117.1 through 117.59 and 117.272,** chapter 2, for drawbridge regulations.) An overhead power cable on the west side of the bridge has a clearance of 65 feet.

(82) A group of four radio towers on the southwestern end of Boot Key and four radio towers about 1.1 miles eastnortheastward of the first group are prominent. Also prominent is a tower with a blue strobe light at a marina 1.2 miles northward of the southeasterly radio towers.

(83) An aerolight is at Marathon Airstrip at the east end of Vaca Key.

(84) Boot Key Harbor is a secure refuge and has excellent small-craft facilities. Several marinas and a boatyard in the western part of the harbor can provide berthage with electricity, gasoline, diesel fuel, water, ice, launching ramps, marine supplies, and hull, engine, and electronic repairs. A boatyard on the north side of the harbor, immediately eastward of the highway bridge, has a 50-ton mobile lift. There are several fish wharves in the harbor where fuel and some services can be obtained. The small-craft facilities on the bay side at Marathon are described in chapter 12.

(85) In April 1983, a privately dredged channel through the shallow eastern part of Boot Key Harbor had a reported controlling depth of 8 feet. The channel leads eastward from near the vicinity of Daybeacon 20 to a marina where berthage with electricity, gasoline, diesel fuel, water, and ice, can be obtained. This marina and Boot Key Harbor proper can also be reached from the southward via Sister Creek as previously described.

(86) **Marathon Coast Guard Station** is on the bay side at Marathon.

## Charts 11442, 11449, 11445, 11446

(87) **Sombrero Key Light** (24°37'40"N., 81°06'39"W.), 142 feet above the water, is shown from a brown,

octagonal, pyramidal skeleton tower on pile foundation, enclosing a square dwelling and stair cylinder; a racon is at the light.

(88) **Moser Channel** is northwestward of Sombrero Key Light and 95 miles southwestward of Miami. It affords a passage for vessels of 7 to 8 feet in draft between the Florida Keys from the Straits of Florida to Florida Bay. The swing span of Seven Mile Bridge across Moser Channel has been removed; however, the bridge piers remain. The fixed highway bridge close south of the former swing span has a clearance of 65 feet.

(89) The tidal current at the bridge has a velocity of about 1.4 to 1.8 knots. Wind effects modify the current velocity considerably at times; easterly winds tend to increase the northward flow and westerly winds the southward flow. Overfalls that may swamp a small boat are said to occur near the bridge at times of large tides. (For predictions, see the Tidal Current Tables.)

### Route

(90) A route with a reported controlling depth of 8 feet, in July 1975, from the Straits of Florida via the Moser Channel to the Gulf of Mexico is as follows: From a point 0.5 mile 336° from the center of the bridge, pass 200 yards west of the light on Red Bay Bank, thence 0.4 mile east of the light on Bullard Bank, thence to a position 3 miles west of Northwest Cape of Cape Sable (chart 11431), thence to destination.

(91) **Bahia Honda Channel (Bahia Honda),** 10 miles northwestward of Sombrero Key and between Bahia Honda Key on the east and **Scout Key** on the west, is the deepest channel between the Straits of Florida and Florida Bay. In 1983, the reported controlling depth was 8 feet from Hawk Channel to Little Pine Key. The passage is crossed by three fixed highway bridges. The southernmost has a clearance of 20 feet over the channel and unlimited vertical clearances at an opening at each end. Mariners are advised to navigate with extreme caution as falling and hanging debris exits in the area. The twin bridges to northward have a clearance of 23 feet over the channel. The direction of the current should be carefully watched when turning northwestward after passing under the bridges in order to avoid being grounded on the banks on either side of the channel. These banks are usually visible. Currents through the passage average 2 knots or more at strength. (For predictions at the southernmost bridge, see the Tidal Current Tables.) From Bahia Honda Channel, vessels may proceed via Big Spanish Channel to the Gulf of Mexico as described in chapter 12.

(92) A marina with two boat basins is at the Bahia Honda State Park, on the bayside and near the western end of **Bahia Honda Key**. In 1981, depths of 4 feet were reported in the unmarked entrance channel, with 7 to 15 feet in the basins. Berths with electricity, water, ice, and a launching ramp are available.

(93) A marina on the northwest side of **Ohio Key,** northeast of Bahia Honda Key, provides berths, gasoline, diesel fuel, water, electricity, ice, limited marine supplies, and a launching ramp; a forklift can handle craft to 23 feet. In 1981, the reported controlling depth was 6 feet in the privately marked entrance channel with 5 to 6 feet reported alongside the berths.

(94) **Newfound Harbor Keys Anchorage,** 16 miles westward of Sombrero Key Light, is in depths of 19 to 22 feet in the channel northeastward of the light at the west end of the keys. **Newfound Harbor Channel** to the northward is clearly defined by the appearance of the water, and is marked by a light and daybeacons. A strong current sets fair with the channel. In 1983, the reported controlling depth was 4 feet to the western of two bridges at the head, 3.4 miles above the entrance. Clearances at the bridges are 15 feet under the westerly span and 9 feet under the easterly span.

(95) A marina is on the west side of **Big Pine Key** about 0.25 mile south of the easterly span. Gasoline, diesel fuel, water, ice, marine supplies, a 2½-ton forklift, and minor hull and engine repairs are available. In 1981, a depth of 3 feet was reported available to the marina.

(96) A marina on the east side of **Little Torch Key,** just south of the westerly span, provides berths with electricity, gasoline, diesel fuel, water, ice, and a launching ramp are available. In 1991, depths of 4 feet were reported in the approach with 10 feet alongside the berths.

(97) A **restricted area** is between Big Pine Key and Little Torch Key due to the presence of high tension power lines. (See Notice to Mariners and latest edition of charts for limits and note.)

(98) In 1983, a 3-foot spot was reported between the entrances to Newfound Harbor and Niles Channels, about 0.45 mile west of Newfound Harbor Channel Entrance Light 2 in about 24°37'09"N., 81°24'55"W.

(99) **Niles Channel,** 18 miles westward of Sombrero Key Light, is the best channel from the Straits of Florida to the Gulf of Mexico between Bahia Honda Channel and Key West. The reported controlling depth, in 1983, was 4 feet from Hawk Channel through Niles Channel and **Cudjoe Channel** to the Gulf. The south entrance to Niles Channel is the narrowest part of two channels and is marked by private stakes. The fixed highway bridge crossing Niles Channel has a clearance of 40 feet. The approach spans of the former highway bridge immediately southward are used as fishing piers; the piers extend 10 feet into either side of the navigation channel and are marked on the channelward ends by lights. Caution should be exercised to avoid pilings on the north side of the bridge. A rocky shoal extends northward from about 350 yards from the bridge.

(100) **Looe Key Management Area (Looe Key National Marine Sanctuary)** has been established to protect and preserve the coral reef ecosystem and other natural resources of the waters surrounding **Looe Key,** about 6 miles south-southeast of Summerland Key. (See **15 CFR 922,** chapter 2, for limits and regulations.)

(101) **Kemp Channel,** about 2 miles westward of Niles Channel, is between Summerland Key to the east and

Cudjoe Key to the west. This channel is highly used by local boaters. In 1986, a reported controlling depth of 3 feet was in the entrance, and 5 feet was in the channel. The channel is marked by daybeacons to the highway bridge. Strangers should seek local knowledge before transiting this area.

(102) U.S. Route 1 highway bridge crossing Kemp Channel, about 2.7 miles above the entrance, has a fixed span with a clearance of 15 feet. A pedestrian bridge in ruins is adjacent to the fixed bridge; caution is advised.

(103) A small marina is near a conspicuous 100-foot flagpole at the south end of Cudjoe Key. Gasoline, limited marine supplies and provisions are available; the marina is limited to shallow draft boats.

(104) **Bow Channel,** about 4 miles westward of Niles Channel and northward of American Shoal Light, leads northward between **Sugarloaf Key** and **Cudjoe Key.** The channel is marked by daybeacons from Hawk Channel for about 1.6 miles and private daybeacons for another 1.4 miles. Two fixed bridges across the channel, one highway and one pedestrian, have least clearances of 8 feet vertical and 24 feet horizontal. Currents are strong and set fair with the channel, north with the flood and south with the ebb. The channel is not recommended for a draft of over 2 feet without a pilot. The reported controlling depths, in 1983, were 4 feet from Hawk Channel to the highway bridge, thence 3 feet to the Gulf of Mexico via Johnston Key Channel. Cudjoe Bay, eastward of the channel, offers fair holding ground for fishing boats.

(105) A small marina at the southwest end of the bridge has berths, gasoline, water, ice, marine supplies, and a launching ramp. A marina on the southwestern side of Cudjoe Key about 0.5 mile south of the eastern end of the bridge is reached through a canal reportedly marked by private daybeacons. Berths, electricity, gasoline, diesel fuel, water, ice, limited marine supplies, engine repairs, and a launching ramp are available.

(106) **American Shoal Light** (24°31'30"N., 81°31'10"W.), 109 feet above the water, is shown from a brown, octagonal skeleton tower on pile foundation, enclosing a brown dwelling and stair cylinder.

(107) **Nine-foot Shoal Light** (24°34'09"N., 81°33'07"W.), 18 feet above the water, is shown from a diamond shaped dayboard on a dolphin.

(108) **Saddlebunch Harbor,** 10.5 miles eastward of Key West, is a good hurricane anchorage for small craft. The northwest end of the harbor is obstructed by a line of submerged pilings. The harbor is marked by private daybeacons.

(109) **Geiger Key,** about 1 mile west of Saddlebunch Harbor, has a marina on the east side about 1 mile south of U.S. Route 1 highway bridge. Berths, gasoline, water, ice, limited marine supplies, and a launching ramp are available.

(110) **Stock Island Channel,** entered about 12.4 miles west-southwestward of American Shoal Light, leads from the Straits of Florida to a point in Hawk Channel just southward of Boca Chica Channel and the entrance to Safe Harbor. The entrance is marked by a light and the channel by a daybeacon.

(111) **Boca Chica Key,** 5 miles eastward of Key West, is the site of the Key West U.S. Naval Air Station. A **naval restricted area** extends about 150 yards from the shoreline along a portion of the northeast side of the Naval Air Station. (See **334.610**, chapter 2, for limits and regulations.) **Boca Chica Channel,** with a reported controlling depth of 9 feet in 2000, from Hawk Channel to the naval air station basin on the west side of the key, is marked by a light at the entrance, thence by lights and daybeacons. An overhead power cable has a clearance of 60 feet across the channel. The basin provides a good hurricane anchorage for small vessels in emergencies only.

(112) A **restricted area** is off the southwest end of Boca Chica Key. (See **334.610**, chapter 2, for limits and regulations.)

(113) Two auxiliary channels marked by private daybeacons lead off Boca Chica Channel. Channel A leads northwest just north of Boca Chica Channel Daybeacon 5. A large boatyard has an entrance on the west side of the channel between Daybeacon 5A and an overhead cable. Transient berths, hull and engine repairs, water, ice diesel fuel, and an open end travel lift which can haul sail and motor vessels to 75 feet and 60 tons are available.

(114) A marina is north of the overhead cable which has an authorized clearance of 25 feet at this point. Water, ice, gasoline, and hull and engine repairs are available.

(115) In 1986, the reported controlling depth was 6 feet to Daybeacon 5A and then 5 feet to the marina.

(116) Channel B leads northwest from opposite Boca Chica Channel Light 8 toward the Route U.S. 1 bridge. In 1986, the reported controlling depth was 4 feet.

(117) A marina in the northwest corner by highway U.S. 1 has transient berths, hull and engine repairs, and gasoline. The following conditions were reported in 1986. Boats proceeding to the marina will find deeper water and avoid obstructions, after passing Daybeacons 6B and 7B, nearer the highway to a point near a boat ramp at the highway, then angling southwest to a spit and following the spit to the marina entrance. Small boats heading north of the highway via the Boca Chica Channel usually pass through at the western end of the bridge where the clearance is less and the water is deeper. Boats passing under the high rise center of the bridge will find shallower water immediately north of the bridge.

(118) **Safe Harbor,** 4 miles eastward of Key West, is a medium-draft harbor on the south side of Stock Island, under the jurisdiction of the Monroe County Port Authority. Conspicuous objects include the stack and tanks at a powerplant and desalination plant on the east side, and a large red dry-storage building at a marina on the southeast end of Stock Island.

(119) The harbor is entered from Hawk Channel through a privately dredged channel. A light marks the approach,

and lights and a daybeacon mark the channel. In 1983, the reported controlling depth was 13 feet in the entrance channel with greater depths inside the harbor.

(120) The piers, with dolphins, on the east side of the harbor near the entrance, are used by barges to unload petroleum products for the power and desalination plants. Depths of 18 feet are reported alongside the piers.

(121) The piers on the east and west sides of the harbor are used by cold storage and seafood packing plants; numerous shrimp boats tie up alongside the finger piers.

(122) A boatyard on the west side at the head of the harbor has a mobile hoist that can handle craft to 60 tons. Diesel fuel, water, and ice are available. In 1982, a depth of 30 feet was reported alongside the piers at the yard; 300 feet of berthing space was available. A marina on the east side at the head of the harbor has transient berths, electricity, water, ice and marine supplies; hull, engine, and radio repairs are available. In 1991, the depth alongside the facility was reported to be 18 feet. A facility serving shrimpers and other commercial vessels on the E side of the harbor, just N of the electric plant, has water, ice, diesel fuel and electricity available.

(123) A privately dredged spur channel east of Safe Harbor leads to a large marina on the southeast end of Stock Island. In 1982, a reported controlling depth of 18 feet was available to the facility. The channel is marked by private daybeacons. Berths, gasoline, diesel fuel, water, ice, electricity, a launching ramp, and storage are available. A forklift can haul out craft to 25 feet for hull and engine repairs. The dockmaster can be contacted on VHF-FM channel 16.

(124) **Cow Key Channel**, between Stock Island and Key West, is narrow and marked by private daybeacons. A shoal that bares is about 0.2 mile south-southwest of the southwest point of Cow Key. In 1999, the reported controlling depth was 3½ feet to the highway bridges about 0.9 mile above the entrance. In 1983, it was reported that the channel was subject to frequent change. Mariners are advised to seek local knowledge before entering the channel. Two fixed bridges with a least clearance of 36 feet horizontal and 9 feet vertical cross the channel between the keys. An overhead cable crosses the channel with a least clearance of 25 feet. The channel north of the highway bridges is unmarked and difficult to follow. Prominent on Stock Island are three radio antennas and a deteriorating drive-in movie screen. Scuba tanks can be filled at a diving facility on the east side of the channel at the bridges. An adjacent marina has berths, water, ice, limited supplies, and a launching ramp. Another marina is on Stock Island about 0.5 mile north of the bridges; berths, gasoline, storage, and marine supplies are available. A forklift can haul out boats to 25 feet for engine repairs. In 1982, a reported controlling depth of 4 feet was available to the facility. Boats can avoid the restricted passage of Cow Key Channel by using Garrison Bight Channel to the north end of Fleming Key, thence sailing easterly north of Sigsbee Park to a dredged channel east of Sigsbee Park, and then following the dredged channel to the marina. In 1986, the reported controlling depth was 4 feet for approximately 150 yards just east of Sigsbee Park and west of the beginning of the dredged channel. Elsewhere, the controlling depth was 8 feet or greater.

## Charts 11441, 11447

(125) **Key West Harbor** is 134 miles and 151 miles southwestward of Miami Harbor via the inside and coastwise routes, respectively. The harbor proper lies in front of the city of Key West, protected on the eastern side by the island and on the other sides by reefs, sand flats, and by **Wisteria Island** and **Tank Island.** The harbor is entered through breaks in the reef by several principal channels with depths of 13 to 34 feet, and by several minor channels.

(126) **Key West,** on the island of the same name near the western end of the Florida Keys, is a winter resort. Commercial fishing is one of the leading industries, but commerce is mostly in crude and refined oils. Cruise ships frequently call here, and the harbor is a safe haven for any vessel.

### Prominent features

(127) Easy to identify when standing along the keys are 300-foot-high radio towers about 0.3 mile eastward of Fort Taylor, the hotel 0.3 mile south of Key West Bight, the cupola close south of the hotel, and a 110-foot-high abandoned lighthouse, 0.5 mile east-northeastward of Fort Taylor. Numerous tanks, lookout towers, and masts are prominent, but difficult to identify. Also conspicuous is a white radar dome and an aerobeacon on Boca Chica Key, and the white dome of the National Weather Service station and the aerobeacon at Key West International Airport. From southward, several apartment complexes, condominiums, and hotels on the south shore extending from just west of Key West International Airport to the abandoned lighthouse are prominent.

(128) **Sand Key Light** (24°27'14"N., 81°52'39"W.), 109 feet above the water, is shown from a white, square, pyramidal, skeleton tower enclosing a stair cylinder and square dwelling.

(129) Sand Key is surrounded by a section of the **Area To Be Avoided Off the Coast of Florida**. See Area To Be Avoided Off the Coast of Florida, indexed as such, chapter 3.

### Channels

(130) **Main Ship Channel** is the only deep-draft approach to Key West. Federal project depth is 34 feet from the Straits of Florida to a turning basin off the Naval Air Station Truman Annex Mole and inside the annex basin, thence 30 feet to an upper turning basin off Key West Bight, and thence 12 feet to and including a turning basin in the bight. (See Notice to Mariners and latest

editions of the charts for controlling depths.) The channel from the entrance to the upper turning basin is marked by lighted ranges and other aids to navigation. Spoil areas are W of the channel.

(131) **Northwest Channel** is a medium-draft passage between Key West Harbor and the Gulf of Mexico. In 2002, the midchannel controlling depth was 10 feet. Vessels can pass directly across the reefs from the Gulf to the Straits of Florida by way of Northwest Channel and Main Ship Channel. The Gulf end of the channel is shifting westward.

(132) The jetties on either side of the Gulf entrance to Northwest Channel are 0.3 to 0.5 mile from the centerline of the channel, and only the outer part of the east jetty shows above low water. The northwest end of the jetty is marked by a light. The channel is marked by a **166°** lighted range, daybeacons, and lighted and unlighted buoys. The pilings and skeletal structure of a former lighthouse are about 0.3 mile southwestward of the south end of the west jetty.

(133) **Smith Shoal** (see chart 11439), about 4.5 miles northward of the northern entrance to Northwest Channel, is covered 11 feet and marked on its northeast end by **Smith Shoal Light** (24°43'06"N., 81°55'18"W.). The light also marks the northern approach to the channel and is shown 54 feet above the water from a small black house on a white, hexagonal, pyramidal skeleton tower on piles. A relatively flat-topped coral head, covered by a least depth of 11 feet, is about 3.3 miles west-southwestward of the light.

(134) **Southwest Channel,** a convenient approach to Key West from southwestward, has been swept to a depth of 23 feet and is marked by buoys. In 1961, this depth was confirmed for midchannel. A general course following the aids leads to the outer anchorage and Main Ship Channel. Strangers should not attempt passage at night.

(135) **West Channel,** a passage leading westward from Key West between the keys and outer reefs, is deep but unmarked. It is used by shrimp boats and small craft bound toward the Dry Tortugas. Local knowledge is advised.

(136) **Calda Channel** leads northward from Man of War Harbor to the open waters of the Gulf. The channel is narrow and crooked, but is well marked by daybeacons and a light at the northerly end. In 1983, the controlling depth was reported to be 3 feet, except for shoaling close to the aids marking the channel. In 1992, severe shoaling was reported to extend into the channel between Daybeacon 6 and Daybeacon 8. The channel should be used only with local knowledge and during good visibility.

(137) **Garrison Bight Channel,** a well marked dredged channel, leads from Man of War Harbor around the north end of Fleming Key, thence south for about 1.8 miles, thence east to Trumbo Point, thence into a turning basin just inside the entrance of Garrison Bight. In 2009, the controlling depth was 2.8 feet (4.7 feet at midchannel) in the channel; thence in 2001-2009, 8 feet in the turning basin. An overhead power cable crosses the entrance and the northerly part of the bight; clearances are 50 feet at the entrance and 34 feet elsewhere. Mariners are advised to use caution when approaching the overhead power cable because high voltage arcing is reported to occur between the powerline and sailboat masts. A privately dredged channel leads from the turning basin to a basin in the southwesterly part of the bight. In 1983, the privately dredged channel had a reported controlling depth of 5 feet. In 1983, the channel was reported to be shifting; local knowledge is advised. A causeway bridge, with a 44-foot span and a clearance of 19 feet, crosses the southwesterly part of the bight.

(138) In 1984, an obstruction covered 4 feet was reported close south of Garrison Bight Channel Light 3 in about 24°35'19.7"N., 81°48'17.2"W.

(139) Garrison Bight can also be reached via an unmarked channel, locally known as Fleming Key Cut, which leads from Man of War Harbor eastward between Fleming Key and the north shore of Key West to the junction with Garrison Bight Channel at Trumbo Point. A depth of about 6 feet can be carried to the junction. Fleming Key Cut is reported to have very strong tidal currents and is not recommended for low-powered vessels. The channel is crossed by a 42-foot fixed span highway bridge with a clearance of 18 feet which connects Fleming Key with Key West. Garrison Bight has excellent small-craft facilities; these are described later in the chapter.

### Anchorages

(140) The best anchorage for medium draft vessels less than 200 feet long is north of the city in **Man of War Harbor** where depths are 14 to 26 feet. Mariners should exercise caution to avoid the visible and submerged wrecks in the harbor. The anchorage is protected against heavy seas by **Frankfort Bank** and **Pearl Bank** on the west and **Fleming Key** on the east. Small craft usually anchor east of **Wisteria Island,** to the west of the main ship channel. Anchoring in the vicinity of Key West Bight Channel Light 2, between Key West Bight Channel and the shoreline, is not recommended because of poor holding ground, strong currents, and obstruction of the dock approaches.

(141) Vessels can anchor west of the city in depths of 20 to 26 feet, taking care, however, to avoid the reefs which rise abruptly in some places along the edges of the channels. The outer anchorages, southwest of **Fort Taylor** is somewhat exposed, but has depths of 20 to 35 feet and is safe for vessels with good ground tackle. The anchorage area at Key West is one of the best for large vessels south of Chesapeake Bay.

### Dangers

(142) **Naval restricted areas** are off the south, west, and north sides of Key West. Another **restricted area** extends about 150 yards from the shoreline around Fleming Key. (See **334.610**, chapter 2, for limits and regulations.)

(143) A **naval explosives anchorage** is about 2.5 miles southwestward of Key West. (See **110.189a**, chapter 2, for limits and regulations.)

(144) Sand Key is surrounded by a section of the **Area To Be Avoided Off the Coast of Florida**. See Area To Be Avoided Off the Coast of Florida, indexed as such, chapter 3.

(145) A **naval operating danger area** is in the Straits of Florida and Gulf of Mexico westward of Key West; see **334.620**, chapter 2, for limits and regulations.

### Caution

(146) Craft approaching Key West, Boca Chica, and Safe Harbor from the eastward through Hawk Channel should be mindful that submerged rocks and reefs extend up to 0.6 mile off the keys and give little or no indication of their presence under certain conditions.

(147) Fishermen operating from the Florida Keys, particularly Key West, routinely use stakes to mark otherwise unmarked channels that they use as short cuts or for safe passage in rough weather. These stakes are not removed when the channels change or fall into disuse. Visitors to the keys should use these channel markers with caution.

(148) The area west of the Main Ship Channel is part of the **Key West National Wildlife Refuge.**

### Currents

(149) A westerly current, counter to the prevailing easterly set of the Gulf Stream, at times exceeding 1 knot, has been reported in the vicinity of Key West Entrance Lighted Whistle Buoy KW. In the southerly approaches to Key West within the 10-fathom curve just inside the entrance to the main channel, the tidal currents are weak and set northward on the flood and southward on the ebb at 0.4 knot. In the main channels west of Fort Taylor, the flood (northerly) and ebb (southerly) currents are 1.0 knot and 1.7 knots, respectively. North of Key West, in the upper turning basin, the tidal currents set northeastward on the flood at 0.8 knot and southwestward on the ebb at 1.1 knots. In Northwest Channel about 2.5 and 5.5 miles, respectively, from Key West, the currents are about 1.2 knots and 0.6 knot. Daily predictions for Key West are given in the Tidal Current Tables, however, both the time and velocity of the tidal current are influenced by the winds. In 1982, it was reported that the current in the channel between Fleming Key and Key West reaches 6 knots during both flood and ebb, with currents of up to 9 knots having been observed north of Pier D-3 at the west end of the channel.

### Weather, Key West and vicinity

(150) Key West has a notably mild, tropical maritime climate where winters are mild and summers pleasant thanks to the Gulf Stream and the prevailing easterly trade winds. The differences in maximum and minimum temperatures are about 10°F (5.6°C) on the average. There is no record of frost, ice, sleet, or snow at Key West and on 49 days annually, on the average, the temperature reaches 90°F (32.2°C) or more. It has never reached 100°F (37.8°C). The extreme maximum temperature for Key West is 95°F (35°C) recorded most recently on August 31, 1957. The average high temperature for Key West is 83°F (28.3°C) while the average low is 73°F (22.8°C). The extreme minimum temperature for Key West is 41°F (5°C) recorded on January 13, 1981.

(151) From December through April, sunshine is abundant and less than 25 percent of the average annual rainfall is recorded, usually as brief showers, in advance of cold fronts. From June through October numerous showers and thunderstorms provide more than 50 percent of the precipitation recorded each year. Heaviest amounts are often associated with easterly waves or the more organized tropical cyclones. The average annual precipitation for Key West is 40 inches (1,016 mm). September is the wettest month averaging nearly 6.5 inches (165.1 mm) and February is the driest averaging just 1.5 inches (38.1 mm).

(152) If a tropical cyclone is considered a threat when it moves within 50 miles (93 km) of Key West, then an average of 1 tropical cyclone threat every three years is the normal. Since 1842, 52 tropical cyclones have come within 50 miles (93 km) of Key West, 19 of these since 1950. Perhaps the most noteworthy was Hurricane Alma in 1966 which passed north of Key West on June 8th. Highest winds were noted at 109 knots at the Dry Tortugas, a short distance to the west of Key West. Hurricane Inez provided maximum winds of 80 knots just four months later on August 4, 1966, a rare approach from the northeast. While tropical cyclones can develop in any month they are most likely in this region from June through November. Even within that period there are fluctuations. Since 1886 only one tropical cyclone has produced significant effects during July. The threat resumes in August, as storms originating east of the Antilles tend to enter the Gulf of Mexico via Cuba or the Florida Straits, instead of recurving northward near the Bahamas. This threat continues into the peak of the season; by October the principal threat is as it was in June, from storms originating in the western Caribbean that move northward across Cuba. Statistically, hurricane force winds can be expected at Key West about once every 15 years and a frequency of 50-knot winds once every 5 years on the average.

(153) Tropical cyclone waves affecting these waters are produced by swell, which advances ahead of the storm, and sea, which is determined by wind direction, which in turn is dependent upon the path of the storm. The deep-water berths outside of North Mole, piers A and B, and Municipal Wharf (Mallory Wharf) are all badly exposed to swells from the southwest. The berths at Naval Air Station Truman Annex are well protected from wave action. The piers off the turning basin north of Key West Bight are affected by waves generated in Man of War Harbor by northerly winds. These conditions can

occur in cold winter outbreaks as well as hurricanes. The anchorages in this harbor are protected from sea and swell by the shallow reef north of the turning basin. Key West Bight is sheltered by Stone Mole, and Garrison Bight is also protected from wave action from all quarters. At Safe Harbor, Stock Island, sea and swell from the southern quadrant will cause heavy surf at the harbor entrance; during southerly winds a seiche of 2 to 3 feet (1 m) inside the harbor is possible.

(154) Storm tides are worst, usually, when an intense hurricane approaches Key West from the Caribbean, passing close to the west. On three occasions since 1900 the streets of the Old Town (greater than 3 m MSL) have been flooded by such storms. The height of the expected surge will appear in the hurricane warnings. However, there is a large variability in surge heights along the Florida Keys due to their physical characteristics. Tidal currents are considerably magnified by the wind and surge generated by a tropical cyclone. This is particularly evident along the deep western shores where effective storm surge drainage has the advantage of reducing tide heights at main berthing facilities.

(155) For masters of deep-draft vessels, shortages of tug power and lack of protected anchorages and piers at Key West, makes an early assessment of a tropical cyclone threat essential. This is best accomplished by using the forecasts in conjunction with climatology. This detailed climatology, as well as the foregoing text and a study of evasion tactics, can be found in the **Hurricane Havens Handbook for the North Atlantic Ocean** (further details in chapter 3.) Under the present port circumstances, evasion at sea is the recommended course of action for all seaworthy, deep-draft vessels capable of making 15 knots or more when the port is under threat from a hurricane or an intense tropical storm (50-63 knots).

(156) The National Weather Service maintains an office at the Key West International Airport. **Barometers** can be compared and weather information obtained by telephone. (See Appendix A for address, and Appendix B for **Key West climatological table.**)

### Pilotage, Key West

(157) Pilotage is compulsory for all foreign and U.S. vessels under register in the foreign trade drawing more than 7 feet (including tugs, barges, and tows) bound for or from Key West Harbor, Key West anchorages, and Key West channels. Pilotage is optional for U.S. mechanically-propelled vessels in the coastwise trade that have on board a pilot properly licensed by the Federal Government.

(158) Pilotage is available from Key West Bar Pilots Association, P.O. Box 848, Key West, FL 33041, telephone 305-296-5512, FAX 305-296-1388.

(159) The Pilot Station is at the NE end of Front Street, Key West. Pilot Station monitors VHF-FM channels 16 and 12 (when expecting traffic). The 42-foot pilot boat has a white hull with black trim and white superstructure with the word PILOT on the side. The 40-foot pilot boat has a blue hull and white superstructure with the word PILOT on the side. Occasionally other boats may be used. Pilots board day or night 1 mile SW of Key West Harbor Entrance Lighted Whistle Buoy KW (24°27'26"N., 81°48'00"W.), or 1 mile N of Key West Northwest Channel Entrance Lighted Bell Buoy 1 (24°38'52"N., 81°53'58"W.).

(160) Vessels being boarded should maintain 5 to 6 knots and provide a good lee with the ladder 1 foot (not dragging) above the water. Seas should be slightly aft of the weather beam. The pilot ladder should be lighted as not to blind the pilot boat operator, and cruise ship passengers should not flash camera bulbs toward the pilot boat operator at night during transfers. Arrangements for pilots are made through the above telephone or FAX number, or through ships' agents. A minimum 24-hour notice of time of arrival is requested; however, pilots will still attempt to service vessels with less time of notice.

(161) The operational guidelines in the Port of Key West are flexible due to changing conditions, different stages of current, tide, bottom shoaling, weather and the change in acceptable risk in emergency situations, Key West being a port of emergency entry as well as a cruise ship port of call and a naval station. The main guideline is a knowledge of seamanship and the port on the part of the pilot and communication of this to the vessel's master for guidance.

(162) Certain rules of thumb are sometimes used. These are:

(163) 1. Not over 12-foot draft of 250-foot length for transiting Northwest channel, daylight only.

(164) 2. Not over 12-foot draft or 250-foot length for entering safe Harbor, Stock Island, under normal conditions.

(165) 3. Tankers docking at Pier D-2 North should do so on or near at slack water, daytime only, with at least two tugs, one for port bow, one for aft, docking starboard side to. Deep draft limited to 25 feet. Sailing should be daytime only, on or near slack water, with two tugs.

(166) 4. Naval men of war with their sonar dome **in the bow** may dock at Pier D-2 North, starboard side to, with deep draft limited to 26 feet. If possible, the same current restrictions as for tankers should be used.

(167) 5. All vessels should be limited to not over 28½ foot-deep draft, dependant on tide. Some piers require shallower drafts and length limitations. Poorly handling ships may be restricted even further in draft, and very large poorly handling ships may be restricted to daylight only and in not over 25 knots wind.

(168) 6. Tug assistance may be needed at berths in Key West, even with twin screw bow thrustered ships, due to wind and current.

(169) 7. Key West Harbor is under the International Rules of the Road.

### Security Calls

(170) All vessels 65 feet or greater and all tugs with tows on entering or leaving Key West Harbor or the Key West

Main Ship Channel shall give Security Calls on VHF-FM channels 16 and 13.

### Towage

(171) Two tugs are available in Key West. One is a twin screw tug of 1,000 hp. The other is a single screw tug of 1,600 hp. Larger Tugs are available from other parts with advance notice.

### Quarantine, customs, immigration, and agricultural quarantine

(172) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(173) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) The quarantine anchorage is in Man of War Harbor if size and draft of vessel permit; larger vessels anchor in the outer harbor.

(174) Public and private hospitals are at Key West.

(175) Key West is a **customs port of entry.**

### Coast Guard

(176) Key West Coast Guard Station is at Pier D-2 on the northwest side of Key West.

### Harbor regulations

(177) The Key West Department of Transportation has direct supervision of city docks, properties, moorings, and anchorages. The Key West Department of Transportation also collects city property port dues. The office telephone numbers are: 305-292-8160, 305-292-8161, and 305-294-7566 (after hours). A 5-mph **speed limit** is enforced in Garrison Bight and in all constricted channel areas.

(178) In the Main Ship Channel, not more than one vessel shall be in the reach of the channel between Lighted Buoys 23 and 25. Vessels in this reach shall have the right-of-way over vessels departing the Truman Annex Basin.

(179) The reach of the channel from Lighted Buoys 14 and 15 to the north end of the Truman Annex Mole shall be kept clear except for vessels able to proceed to their berths without delay. Vessels shall not lie to in this reach of the channel. If a vessel is unable to proceed because of harbor congestion, she shall pull aside to the westward and lie to in safe water. No passing is permitted in this reach of the channel.

(180) Vessels shall not overtake or pass in the following areas: between Buoys 2 and 3; in the passage from Western Triangle and Eastern Triangle to Buoys 7 and 8; and in the passage from Buoy 9 to Buoys 14 and 15.

(181) It is permissible to pass in Cut A Range reach between Buoys 7 and 12 after making proper signals, but extreme caution is mandatory when passing in the narrow reaches of the channel.

(182) Vessels which will be delayed in berthing shall notify vessels astern of that fact in order that they may proceed.

(183) Nothing in the above shall relieve masters or commanding officers of their responsibilities for observing the Navigation Rules and the practice of good seamanship.

### Wharves

(184) **Municipal Wharf**, also known as **Mallory Wharf** (24°33'35"N., 81°48'28"W.), is 870 feet long and has a deck height of about 7 feet. The northerly half is privately owned by a condominium development. The southerly half is operated by the Key West Department of Transportation as a cruise ship terminal. Two mooring dolphins off the wharf face provide a total of 464 feet of berthing space with reported depths of 26 feet alongside. Smaller vessels can berth along the wharf face in the 200 feet between the dolphins. Depths of 18 to 23 feet are reported alongside. Potable water is available with advance arrangements. Large vessels must depart the berth 45 minutes before sunset except is emergency, or by special arrangement with the Key West Department of Transportation.

(185) Pier B (24°33'22"N., 81°48'33"W.) is another deepwater berthing facility operated by the Truman Annex Company. It has a face of 306 feet with a mooring dolphin to the N of the dock. Maneuverable ships up to 800 feet have docked at this berth. The pier has a deck height of about 9 feet.

(186) The Outer Navy Mole (24°33'17"N., 81°48'39"W.), another deepwater berth, has a face of 580 feet and a deck height of 7 feet. Sometimes the mole is used to dock vessels up to 855 feet in length, by directions of the Key West Department of Transportation.

(187) Municipal Wharf, Pier B, and the Outer Navy Mole are available for emergency dockage. Contact the Key West Pilots Association, ship's agent, or Key West Department of Transportation for further information

(188) Commercial fish wharves are in Key West Bight and Safe Harbor. Charter boats and yachts use Key West Bight, Garrison Bight and Stock Island.

### Supplies

(189) Gasoline, diesel fuel, water, ice, provisions, and marine supplies can be obtained in Key West.

### Repairs

(190) There is a small repair yard at Key West on the west side of Garrison Bight. Lifts to 30 tons, and hull, engine, electrical, and electronic repair facilities are available. Above-the-waterline repairs can also be made to larger vessels. In 1991, shoaling to 3½ feet was reported at the entrance to the yard, with 5 feet available inside.

### Small-craft facilities

(191) Berths, electricity, water, ice, and some marine supplies are available at Key West. Gasoline and diesel fuel are available in Garrison Bight and Key West Bight. A pumpout facility is at a marina in the southwestern part of Key West Bight. Hull, engine, electrical,

and electronic repairs can be made. Small craft berths are available at several marinas in Key West Bight, in Garrison Bight at the Municipal Marina or at Key West Yacht Club, which are at the southwest and eastern ends of the bight, respectively. A causeway across the southwestern part of Garrison Bight has a small-craft opening. The highway bridge over the opening has a 44-foot fixed span with a clearance of 19 feet at the center. An overhead power cable crossing the northern part of Garrison Bight and the entrance has a clearance of 50 feet over the entrance and 34 feet elsewhere. Anchoring or mooring in Garrison Bight, except in an emergency or as a shelter during bad weather, is not permitted. Public small-boat ramps are in Garrison Bight, at the foot of Simonton Street, and at the south end of Bertha Street.

### Communications

(192) There are no rail connections at Key West. Movement of freight in and out of the port is by vessel or truck. The Overseas Highway (U.S. Route 1) connects the city with Miami and points north, and there is air service to Miami. Bus service is available to mainland points.

(193) **Information about the Florida Reefs west of Key West and the Gulf of Mexico is contained in United States Coast Pilot 5, Atlantic Coast–Gulf of Mexico, Puerto Rico, and Virgin Islands.**

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11466 | Jupiter Inlet, south jetty | 26°57'N/80°04'W | 2.8 | 2.7 | 0.2 |
| 11466 | Port of Palm Beach, Lake Worth | 26°46'N/80°03'W | 3.1 | 2.9 | 0.2 |
| 11466 | Lake Worth Pier, ocean | 26°37'N/80°02'W | 3.0 | 2.9 | 0.1 |
| 11466 | Hillsboro Inlet (CG station) | 26°16'N/80°05'W | 2.8 | 2.6 | 0.2 |
| 11466 | Port Everglades, Turning Basin | 26°06'N/80°07'W | 2.8 | 2.7 | 0.2 |
| 11465 | Miami Harbor entrance, ocean pier | 25°46'N/80°08'W | 2.7 | 2.6 | 0.2 |
| 11465 | Miami Miamarina, Biscayne Bay | 25°47'N/80°11'W | 2.4 | 2.3 | 0.1 |
| 11465 | Cutler, Biscayne Bay | 25°37'N/80°18'W | 2.1 | 2.1 | 0.1 |
| 11465 | Ragged Keys, Biscayne Bay | 25°32'N/80°10'W | 1.9 | 1.8 | 0.1 |
| 11465 | Elliott Key Harbor, Elliott Key | 25°27'N/80°12'W | 1.6 | 1.6 | 0.1 |
| 11463 | Turkey Point, Biscayne Bay | 25°26'N/80°20'W | 1.8 | 1.7 | 0.1 |
| 11463 | Christmas Point, Elliott Key | 25°24'N/80°14'W | 2.0 | 2.0 | 0.1 |
| 11463 | Totten Key, west side, Biscayne Bay | 25°23'N/80°15'W | 1.4 | 1.3 | 0.1 |
| 11463 | Pumpkin Key, south end, Card Sound | 25°20'N/80°18'W | 0.8 | 0.7 | 0.1 |
| 11463 | Ocean Reef Harbor, Key Largo | 25°19'N/80°17'W | 2.5 | 2.5 | 0.2 |
| 11464 | Garden Cove, Key Largo | 25°10'N/80°22'W | 2.4 | 2.3 | 0.2 |
| 11464 | Tavernier Harbor, Hawk Channel | 25°00'N/80°31'W | 2.4 | 2.2 | 0.2 |
| 11464 | Alligator Reef, Hawk Channel | 24°51'N/80°37'W | 2.2 | 2.1 | 0.2 |
| 11452 | Flamingo | 25°09'N/80°55'W | 2.5 | 2.3 | 0.3 |
| 11452 | Boot Key Harbor bridge, Boot Key | 24°42'N/81°06'W | 2.0 | 1.8 | 0.2 |
| 11449 | Indian Key Anchorage, Lower Matecumbe Key | 24°52'N/80°42'W | 2.2 | 2.1 | 0.2 |
| 11446 | Bahia Honda Key, Bahia Honda Channel | 24°39'N/81°17'W | 1.5 | 1.3 | 0.1 |
| 11442 | Big Spanish Key | 24°47'N/81°25'W | 3.3 | 3.0 | 0.4 |
| 11447 | Key West, south side, White Street Pier | 24°33'N/81°47'W | 1.9 | 1.6 | 0.2 |
| 11446 | Cudjoe Key, Kemp Channel bridge | 24°40'N/81°28'W | 1.1 | 0.9 | 0.1 |
| 11446 | Bird Key, Similar Sound | 24°35'N/81°38'W | 1.1 | 0.9 | 0.1 |
| 11446 | Channel Key, west side | 24°36'N/81°44'W | 1.4 | 1.1 | 0.2 |
| 11447 | Key West | 24°33'N/81°49'W | 1.8 | 1.5 | 0.2 |
| 11441 | Sand Key Lighthouse, Sand Key Channel | 24°27'N/81°53'W | 1.7 | 1.4 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011

Index of Chart Coverage in Chapter 12
VIRGINIA
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
FLORIDA
ATLANTIC OCEAN
Norfolk
Elizabeth City
Cape Hatteras
Jacksonville
Wilmington
Cape Lookout
Cape Fear
Charleston
Savannah
Jacksonville
St. Augustine
Cape Canaveral
ST. LUCIE INLET
LAKE OKEECHOBEE
Miami
Key West
12206
11553
11541
11534
11518
11507
11489
11485
11472
11467
11451
11448
11446
11445
82°
80°
78°
76°
74°
36°
34°
32°
30°
28°
26°

# Intracoastal Waterway

(1) The part of the **Intracoastal Waterway** described here is the toll-free **"canal"** which affords continuous protected passage behind the Atlantic Coast and the Florida Keys for more than 1,243 statute miles between Norfolk, VA, and Key West, FL **Route 1,** the basic route, follows Albemarle and Chesapeake Canal to Albemarle Sound; **Route 2,** the alternate route, is through Great Dismal Swamp Canal to the sound.

(2) Also described in this chapter is the Okeechobee Waterway, which junctions with the Intracoastal Waterway in St. Lucie Inlet.

(3) The Intracoastal Waterway is used by commercial light-draft vessels and tows unable to navigate long stretches in the open ocean, and by pleasure craft. Small-boat and recreation facilities are found along the waterway. Supervision of the waterway's construction, maintenance, and operation is divided among five U.S. Army Engineer Districts (Norfolk, Wilmington, Charleston, Savannah, and Jacksonville) whose district-office addresses are listed in Appendix A.

### Mileage

(4) The Intracoastal Waterway (I.W.) mileage is zeroed at 36°50.9'N., 76°17.9'W., off the foot of West Main Street, Norfolk, VA, and progresses southward to I.W. Mile 1243.8 at Key West, FL, in 24°33.7'N., 81°48.5'W.

(5) **Distances along the Intracoastal Waterway are in statute miles to facilitate reference to the small-craft charts; all other distances are nautical miles. Mileage conversion tables are in Appendix B.**

### Channels

(6) The Federal project for the Intracoastal Waterway via Albemarle and Chesapeake Canal provides for a least depth of 12 feet from Norfolk, VA, (I.W. Mile 0.0) to Fort Pierce, FL, (I.W. Mile 965.6), thence 10 feet to Miami, FL, (I.W. Mile 1089.0), and thence 7 feet to Key West, FL, (I.W. Mile 1243.8). The Miami to Key West section of the waterway has been completed only as far as Cross Bank (I.W. Mile 1152.5); the remainder has been deferred for restudy. Although no work has been performed on this section of the waterway, a channel, marked in accordance with I.W. markings, leads from Cross Bank to Big Pine Key along the northwesterly side of the Florida Keys. At Big Pine Key, the waterway bifurcates going north through Florida Bay or south through Hawk Channel to Key West. The channel has a controlling depth of about 5 feet and is exposed to winds from the northwest. (See Local Notice to Mariners and latest editions of charts for controlling depths of the Intracoastal Waterway.)

(7) The alternate route of the Intracoastal Waterway through the Great Dismal Swamp Canal and the Okeechobee Waterway is described later in this chapter.

### Bridges

(8) The minimum overhead clearance of fixed bridges over the Intracoastal Waterway is 56 feet at the Julia Tuttle Causeway at Miami, **Mile 1087.1.**

(9) General drawbridge regulations and opening signals for bridges over the Intracoastal Waterway are given in **117.1 through 117.49**, chapter 2. Special drawbridge regulations for certain bridges that supplement the general regulations are referenced with the area description of the waterway.

(10) As a public service and to assist in the management and safety of the Intracoastal Waterway, VHF-FM channels 13 and 16 are monitored at some of the bridges.

### Overhead cables

(11) The minimum clearance of overhead cables crossing the Intracoastal Waterway is 68 feet in Snows Cut, **Mile 295.8**. An overhead cable car at **Mile 356.4** has a least clearance of 67 feet under the low point of travel of the cabin.

### Caution

(12) When running with a fair tide or in windy weather, exercise caution when approaching and passing bridges and sharp turns. Many of the overhead cables over the waterway carry high voltage, and a margin of safety should be allowed when weather is unfavorable.

### Locks

(13) Great Bridge Lock (mile 11.5) is the only lock on the Intracoastal Waterway between Norfolk and Key West via Albemarle and Chesapeake Canal. It is 600 feet long (530 usable), 75 feet wide (72 feet usable), 16 feet over the sills, and has a lift of 2.7 feet. (See **207.160**, chapter 2, for regulations governing use, administration, and navigation of locks and floodgates.)

(14) Locks on the Great Dismal Swamp Canal and the Okeechobee Waterway are described later in this chapter.

### Cable ferries

(15) Cable ferries are guided by cables fastened to shore and sometimes propelled by a cable rig attached to the

shore. Generally, the cables are suspended during crossings and dropped to the bottom when the ferries dock. Where specific operating procedures are known they are mentioned in the text. Since operating procedures vary, mariners are advised to exercise extreme caution and seek local knowledge. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

### Aids to navigation

(16) Intracoastal Waterway aids have characteristic yellow markings which distinguish them from aids to navigation marking other waters. (See U.S. Coast Guard Light Lists or Chart 1 (Nautical Chart Symbols and Abbreviations) for illustrations of special markings.)

(17) Lights and daybeacons should not be passed close aboard because those marking dredged channels are usually placed back from the bottom edge of the channel and others may have rip-rap mounds around them to protect the structures.

### Charts

(18) Navigation of the Intracoastal Waterway can be made easier by use of the special small-craft series which the NOAA publishes.

### Tides

(19) Under ordinary conditions the mean range of tide in the waterway is from nontidal to about 7 feet. In many sections, the tide depends on the force and direction of the wind. Severe hurricanes have raised the water surface 10 feet or more above low water, in some localities.

### Cross currents

(20) Where two streams cross, the current will have a greater velocity in the deeper channel. This is noticeable along the Intracoastal Waterway where it follows a dredged canal cutting across a winding stream. Cross currents will also be noticed where either an inlet from the ocean or a drainage canal enters the waterway.

### Weather

(21) The Intracoastal Waterway affords protection from the winds and waves of the offshore Atlantic. Land creates friction that reduces windspeeds by as much as 30 percent of those over the open sea. Wave heights are reduced by shallow depths and limited fetch. When severe weather does strike, shelter is usually close by, either up a protected river or at a nearby port. However, navigation becomes more critical in many restricted reaches along this route, so that weather, as well as tides and currents, is important. The waterway is covered by a network of National Weather Service VHF-FM radio stations that provide continuously updated forecasts and warnings. Also Coastal Warning Display signals are located at various places along the Intracoastal Waterway and connecting channels. The Marine Weather Services Charts published by the National Weather Service show the locations of both the radio stations and warning displays, while display locations are also listed on the NOAA charts.

### Small-craft facilities

(22) There are many small-craft facilities along the Intracoastal Waterway. For isolated places and small cities, this chapter describes the more important of these facilities; for large recreational areas, where individual facilities are too numerous to mention, the information given is more general. Additional information may be obtained from the series of small-craft charts published for the many places, and from various local small-craft guides.

### COLREGS Demarcation Lines

(23) The lines established for Chesapeake Bay and the rivers, sounds, and inlets of the coasts of Virginia, North and South Carolina, Georgia and Florida are described in **80.510 through 80.735 and 80.740**, chapter 2.

## Chart 12206

(24) **Norfolk**, on the east bank of the Elizabeth River in Norfolk Harbor 26 miles inside the entrance to Chesapeake Bay, is one of the major ports of the United States. Supply and repair facilities are available at the marinas and yacht basins in Norfolk Harbor. A detailed description of the port is contained in **United States Coast Pilot 3, Atlantic Coast, Sandy Hook to Cape Henry.**

(25) From the City Wharf at the foot of West Main Street in Norfolk, **Mile 0.0,** the Intracoastal Waterway follows the Southern Branch of Elizabeth River to its junction with Deep Creek where the waterway divides into two routes. **Naval restricted areas** are on both sides of the river. (See 334.290, chapter 2, for limits and regulations.)

(26) The **speed limit** is 6 knots from Eastern Branch to the railroad bridge, **Mile 2.6.** This bridge has a lift span with a clearance of 6 feet down and 142 feet up. VHF-FM channels 16 and 13 are monitored at the bridge. At **Mile 2.8,** Jordan (State Route 337) highway bridge has a lift span with a clearance of 15 feet down and 145 feet up. VHF-FM channels 16 and 13 are monitored at the bridge. The railroad bridge at **Mile 3.6** has a lift span with a clearance of 10 feet down and 135 feet up. U.S. Routes 460 and 13 highway bridge and the Norfolk Southern Railway bridge at **Mile 5.8** have bascule spans with clearances of 11 feet and 7 feet, respectively; large vessels must exercise caution when making the turns to these bridges because of the current. VHF-FM channels 16 and 13 are monitored at these bridges. An overhead power cable at **Mile 6.5** has a clearance of 152 feet, and two overhead cables at **Mile 6.9** have clearances of 161 feet. Interstate Highway Route 64 bascule bridge at **Mile 7.1** has a clearance of 65 feet. (See **117.1 through 117.59 and 117.997 (a) through (e)**, chapter

2, for drawbridge regulations.) The bridgetender may be contacted at 757-545-4685.

(27) The **Albemarle and Chesapeake Canal**, about 10 miles long, connects Southern Branch of Elizabeth River with North Landing River.

### Route 1.–Via the Albemarle and Chesapeake Canal to North River

(28) From **Mile 7.2** at the entrance to Deep Creek, the basic route continues through Southern Branch, the Albemarle and Chesapeake Canal, North Landing River, Currituck Sound, Coinjock Bay, and North Carolina Cut to North River. The route is well marked and easily followed in daylight; strangers are advised against running at night.

(29) At **Mile 8.1,** the remains of a railroad swing bridge cross the waterway with a horizontal clearance of 80 feet. Virginia Highway 104 bridge (Dominion Boulevard Bridge) at **Mile 8.8** has a bascule span with a clearance of 12 feet. (See **117.1 through 117.59 and 117.997(f)**, chapter 2, for drawbridge regulations.) At the entrance of **Sykes Creek, Mile 9.3,** there is a small-craft basin which had reported depths of 5 feet in the approach and alongside the berths in 1983. Berths with electricity, water, gasoline, diesel fuel, ice, and some marine supplies are available. A marine railway in the basin can handle craft up to 35 feet for hull and engine repairs. In 1978, submerged piles were reported in the entrance to Sykes Creek, in about 36°44'02"N., 76°17'08"W.

(30) **Great Bridge Lock, Mile 11.5,** at the Southern Branch end of the Albemarle and Chesapeake Canal, is a tidal guard-lock 600 feet long, 72 feet wide, 16 feet over the sills, and a lift of 2.7 feet. Maximum length of tow allowed in the lock is 530 feet. Vessels and tows wider than 45 feet will not be permitted to pass through the lock without prior permission of the lock operator. Tie-up dolphins are available at Great Bridge for temporary mooring when passage through the lock is delayed. There is no periodic tide southward of the lock; the water level depends on the force and direction of the winds. All vessels passing through the lock are required to list their registry, tonnage, and passengers.

(31) The lock operator can be contacted 24 hours a day, 7 days a week on VHF-FM channels 13 and 16 or telephone 757-547-3311 for lock information.

(32) **Great Bridge,** a town on the Albemarle and Chesapeake Canal at **Mile 12.0,** has bus connections with Norfolk. State Route 168 highway bridge across the canal at the town has a double-leaf bascule span with a clearance of 8 feet. VHF-FM channels 16 and 13 are monitored at the bridge. (See **117.1 through 117.59 and 117.997 (e)**, chapter 2, for drawbridge regulations.) Tie-up dolphins are available on both sides of the bridge for temporary mooring up to 24 hours.

(33) A privately owned marina basin is on the south side of the canal a short distance eastward of Great Bridge. In 2005, a depth of 8 feet was reported alongside the piers in the basin. Berthage with electricity, water, ice, gasoline, diesel fuel, pump-out station, and marine supplies are available. A marine railway is available that can handle craft to 60 feet; hull, engine and electronic repairs can be made.

(34) From Great Bridge, the Albemarle and Chesapeake Canal continues eastward almost in a straight line for a distance of about 7 miles. The State Route 168 Bypass fixed highway bridge with a clearance of 65 feet crosses the canal at **Mile 13.0.** The Norfolk Southern Railway bridge at **Mile 13.9** has a bascule span with a clearance of 7 feet. The Centerville Turnpike Bridge at **Mile 15.2** has a swing span with a clearance of 4 feet. (See **117.1 through 117.59 and 117.997(f),** chapter 2, for drawbridge regulations.) A marina with a reported alongside depth of 7 feet in 2005 is immediately above the bridge on the north side. Transient berths, electricity, gasoline, diesel fuel, water, ice, pump-out station, launching ramp, and engine repairs are available. An overhead power cable with a clearance of 91 feet is at **Mile 16.4.**

(35) **North Landing, Mile 20.2,** is a small town at the junction of Albemarle and Chesapeake Canal and North Landing River. State Route 165 highway bridge over North Landing River at North Landing has a swing span with a clearance of 6 feet. (See **117.1 through 117.59,** chapter 2, for regulations.) VHF-FM channels 16 and 13 are monitored at the bridge.

(36) **North Landing River** is narrow and crooked for a distance of about 9 miles below the Albemarle and Chesapeake Canal. The worst bends have been bypassed by dredging through the marshy points; the remaining bends are usually easy. The old channels through the cut-off bends have numerous wrecks, partially visible at mean low water, and some submerged wrecks which are dangerous to navigation. At **West Landing, Mile 22.8,** there is a gasoline dock, open only in summer. At **Pungo Ferry, Mile 28.3,** State Route 726 fixed highway bridge across the river has a clearance of 65 feet. A marina just below the bridge on the east side of the waterway had a reported alongside depth of 5 feet in 1993. Transient berths, electricity, water, ice, pump-out station, hull and engine repairs, and a launching ramp are available.

(37) From **Mile 30.2,** the route is through a dredged cut in the open waters of North Landing River and **Currituck Sound,** thence into **Coinjock Bay** and through North Carolina Cut to the head of North River. **Munden** is a town on the east side of North Landing River at **Mile 32.0;** the wharf is in ruins. **Currituck** is a town on the west side of the mouth of North Landing River opposite **Mile 41.5.** A toll-free passenger-auto ferry, operated by the State Highway Commission, runs from Currituck to Knotts Island, NC.

(38) **Coinjock, Mile 49.9,** is a town on the Norfolk-Hatteras Highway, midway along the **North Carolina Cut** U.S. Route 158 fixed highway bridge across the cut has a clearance of 65 feet. An overhead power cable on the north side of the bridge has a clearance of 85 feet. Berths with electricity, gasoline, diesel fuel, pump-out, water,

ice, and marine supplies can be obtained at the small-craft facilities northward of the bridge. A 70-ton marine railway which can handle craft to 60 feet, and a 10-ton mobile lift are available at the facilities on the west bank of the cut northward of the bridge; hull, engine, and electronic repairs can be made. A launching ramp is at the facility on the east side of the cut northward of the bridge.

(39) A canal 22 feet wide branches northeastward from North Carolina Cut about 1.1 miles northward of the Coinjock Bridge, and connects with Currituck Sound through **Parker Creek.** In 1983, depths of about 2 feet were reported in the canal. Tree stumps in the canal limit its use to outboards only; caution is advised. The fixed bridge 0.1 mile above the canal has a reported clearance of 6 feet.

(40) **North River** is about 14 miles long from North Carolina Cut to the entrance from Albemarle Sound and has a general depth of about 9 feet outside the dredged cut of the Intracoastal Waterway. The channel is marked by lights and daybeacons.

### Route 2.–Via Great Dismal Swamp Canal to Albemarle Sound

(41) This alternate route from the entrance to **Deep Creek, Mile 7.6,** leads westward from the Southern Branch to Great Dismal Swamp Canal, thence through Pasquotank River to Albemarle Sound.

(42) Vessels that proceed with care and follow the chart can navigate this route without difficulty. Mariners may call 757-487-0831 for canal conditions. Extra caution is required in Deep Creek, Turners Cut, and the numerous sharp bends in the upper reaches of the Pasquotank River. Winds sometimes cause a variation of 1 to 2 feet in water level. Overhead power cables with a least clearance of 91 feet cross Deep Creek at **Mile 8.0**.

(43) **Great Dismal Swamp Canal,** a 19-mile-long nontidal summit-level section, is controlled by a lock at each end. "NO WAKE" signs have been posted in the canal. Vessels shall proceed at a speed to cause minimum wake.

### Channels

(44) Federal project depths are 10 feet in Deep Creek, 9 feet in Great Dismal Swamp Canal, and 10 feet in Pasquotank River. Great Dismal Swamp Canal is being maintained to a depth of only 6 feet because of reduced usage by vessels requiring a 9-foot channel. (See Local Notices to Mariners and latest editions of charts for controlling depths.)

### Locks

(45) There are two locks on the alternate route, one at the upper end and the other at the lower end of the Great Dismal Swamp Canal. **Deep Creek Lock** (Mile 10.6) and **South Mills Lock** (Mile 33.2) have the same dimensions; 300 feet long, 52 feet wide, 12 feet over sills, and lift of 12 feet. Vessels and tows wider than 35 feet will not be permitted to pass through the locks without prior permission of the lock operator. Regulations governing use, administration, and navigation of locks and floodgates are given in **207.160,** chapter 2.

(46) At times, due to low water, navigation may be restricted or the canal closed. Deep Creek Lock and South Mills Lock are operated at 0830, 1100, 1330, and 1530 daily. The bridges adjacent to the locks will be opened as necessary in coordination with the locks. The lock operators can be contacted on VHF-FM channel 13 or 757-487-0831. Vessels may tie up in the canal overnight, at the Government facilities at Deep Creek, South Mills, and the Feeder Ditch to Lake Drummond.

(47) At Deep Creek Lock, **Mile 10.6,** vessels are required to list their registry, tonnage, and passengers. A dock about 100 feet long is at the lock. The town of **Deep Creek** is at **Mile 11.1,** and U.S. Route 17 highway bridge across the canal here has a bascule span with a clearance of 4 feet. Just south of the bridge is a bulkhead with 4 to 8 feet alongside where gasoline and some supplies may be obtained; there is a small-boat launching ramp.

(48) An overhead power cable with a clearance of 111 feet is at **Mile 12.1.**

(49) At **Mile 21.5**, a 30-foot-wide feeder ditch runs in a straight line westward from the Great Dismal Swamp Canal for about 3 miles to **Lake Drummond**; the ditch has a reported controlling depth of 3 to 4 feet, and the lake has depths of 3 to 5 feet. Lake Drummond is about 2.2 miles in diameter and the water level is about 6 feet higher than the canal. Flow of water from the lake is regulated by a series of gates or wickets in the feeder ditch at the Corps of Engineers reservation 0.5 mile from the lake. Boats less than 1,000 pounds are moved overland past the gates by a small railway. All persons entering or leaving Lake Drummond through the feeder ditch are required at the gates to register their name, address, and purpose of visit. Visitors are warned of the dangers of being lost in the swamps and the menace of poisonous snakes, and are cautioned to take precautions to prevent forest fires. After winter and spring runoffs of water from Lake Drummond, there is a tendency for shoals to build up at the intersection of the Great Dismal Swamp Canal and the feeder ditch.

(50) A fixed highway bridge with a clearance of 65 feet is at **Mile 31.5.**

(51) Diesel fuel by tank truck and gasoline are available on the east side of the canal at **Mile 31.5.** Supplies are available at **South Mills**, **Mile 32.4.**

(52) U.S. Highway 17 bridge across the canal at **Mile 32.6** has a bascule span with a clearance of 4 feet. The **South Mills Lock** of the Great Dismal Swamp Canal is at **Mile 33.2.** Tieup dolphins are available for temporary mooring when passage through the lock is delayed.

(53) **Turners Cut** is a canal which extends in nearly a straight line from the south end of Great Dismal Swamp Canal to the Pasquotank River **Mile 37.0.**

(54) **Pasquotank River** has a length of 12 miles from the south end of Turners Cut to Elizabeth City, and thence

15 miles to Pasquotank River Entrance Light PR at the entrance from Albemarle Sound. The narrow upper part of the river has been improved by dredging, where necessary, to attain the project depth of the waterway. From Elizabeth City to the mouth, the river varies in width from 0.5 to 3 miles, has general depths of 8 to 12 feet, and is well marked by lights.

(55) The Norfolk Southern Railway bridge across Pasquotank River at **Mile 47.7** has a hand-operated swing span with a channel width of 42 feet and a clearance of 3 feet. (See **117.1 through 117.59 and 117.833(a)**, chapter 2, for drawbridge regulations.) The overhead power cables along the south side of the bridge have a least clearance of 85 feet.

(56) **Knobbs Creek** is a nontidal freshwater stream on the north side of Elizabeth City and enters Pasquotank River at **Mile 50.2.**

(57) A dredged channel leads from Pasquotank River to a turning basin about 0.9 mile above the entrance, thence to the Norfolk Southern Railway bridge at the head of navigation about 1 mile above the entrance. In 1959-1974, the controlling depths were 9 feet on the centerline to the basin, thence 5½ feet in the basin, thence 2½ feet on the centerline to the head of navigation. An overhead power cable with a clearance of 75 feet crosses the creek just above the mouth.

(58) **Elizabeth City**, Mile 50.7, on the west bank of Pasquotank River, is one of the most important towns on the inland waters of North Carolina, and has rail, airline, and highway connections with Norfolk. Waterfront bulkheads have 20 to 27 feet alongside, and a vessel can usually find a berth. Anchorage can be had in depths of 7 to 12 feet on the north side of the channel just below the city. U.S. Route 158 highway bridges across the river at **Mile 50.7** have bascule spans with least clearances of 2 feet. (See **117.1 through 117.59 and 117.833 (b)**, chapter 2, for drawbridge regulations.) The river water is practically fresh.

### Weather, Elizabeth City and vicinity

(59) Elizabeth City enjoys mild winters and warm summers. Weather is tempered somewhat by the Albemarle Sound. Maximum temperatures reach 90°F (32.2°C) or more on about 33 days annually although 100°F (37.8°C) or more is usually reached on only 1 day each year. Minimum temperatures drop below freezing on an average of 55 days annually. The average high temperature at Elizabeth City is 69°F (20.6°C) while the average low is 50°F (10°C). July is the warmest month with an average high of 87°F (30.6°C) and an average low of 70°F (21.1°C). December is the coolest with an average high of 53°F (11.7°C) and an average low of 34°F (1.1°C). The warmest temperature on record is 104°F (40°C) recorded on July 22 and 23, 1952. The coolest temperature on record is 10°F (-12.2°C) recorded in February 1951. Only June and July have recorded temperatures in excess 100°F (37.8°C) and each month, October through April, has reported temperatures below freezing.

(60) Winds blow most frequently from the southwest, except in the fall when northeasterlies prevail. Gales are rare and winds of 17 knots or more occur only 2 to 3 percent of the time from October through April. Visibilities are worst from September through January, when they drop below 0.5 mile (0.9 km) on an average of 3 to 5 mornings per month; by noon this type of fog has generally lifted.

(61) Precipitation averages nearly 47 inches (1,193.8 mm) each year and is most frequent during the summer, particularly as brief heavy showers or thunderstorms. July is the wettest month averaging about 6.5 inches (165.1 mm) of rainfall while October is the driest month averaging about 2.5 inches (63.5 mm). About 3 to 4 inches (76.2 to 101.6 mm) of snow falls each winter. Snow has fallen in each month, November through April. The greatest 24-hour snowfall occurred on February 26, 1963 when 6.2 inches (157.5 mm) accumulated.

(62) Complete supply and repair facilities, restaurants, and hotel and motel accommodations are available at Elizabeth City. Small-craft facilities on both sides of the river southward of the bridge have about 3,600 feet of berthing space available. Gasoline, diesel fuel, water, ice, and marine supplies can be obtained.

(63) A boatyard on the south side of the river about 0.4 mile south of the bridge has a 60-ton fixed lift, and a marine railway that can handle craft up to 130 feet. Another boatyard just to the northward has a marine railway that can handle craft to 65 feet. Both facilities provide berths, gasoline diesel fuel, water, ice, marine supplies, and can make hull, engine, and electronic repairs.

(64) Elizabeth City has railroad freight connections with the Norfolk Southern railway and highway connections with U.S. Routes 17 and 158 and State Route 168.

(65) **Elizabeth City Coast Guard Air Station** is on the southwest side of the river about 3 miles southeastward of U.S. Route 158 highway bridge at Elizabeth City.

(66) **Newbegun Creek** enters Pasquotank River about 8.5 miles below Elizabeth City. **Weeksville,** the principal town on the creek, is 3 miles from the mouth. The controlling depth in 1963 was about 4 feet over the bar and in the main part of the creek. The creek is unmarked.

(67) Route 2 continues down the Pasquotank River, passing northward of Pasquotank River Entrance Light PR, and then turns southward across Albemarle Sound to join with Route 1 at the light at the entrance to Alligator River.

## Chart 11553

(68) From the vicinity of the light at the entrance to North River, Route 1 continues across Albemarle Sound for 12.7 miles to the light at the entrance to Alligator River, where alternate Route 2, via the Great Dismal

Swamp Canal rejoins the basic route. The passage across the sound to Alligator River is marked by lights. In heavy weather the passage is uncomfortable and even dangerous for open boats. The rise and fall of the water level in Albemarle Sound depends on the wind.

(69) **Alligator River** extends in a southerly direction for about 20 miles, then turns west and narrows. The channel of the Intracoastal Waterway has been dredged the entire length of the wider part of the river and for about 4 miles through its western reach to the land cut connecting with Pungo River. The channel is well marked by lights and daybeacons. U.S. Route 64 highway swing bridge with a clearance of 14 feet crosses the waterway at **Mile 84.2** opposite **East Lake** on the eastern shore. It is reported that this bridge will not open if the wind speed is over 34 knots. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, KU-9448. A small-craft facility at **Mile 84.1,** just north of the bridge on the west bank, has berths, gasoline, diesel fuel, pump-out, electricity, water, ice, and some marine supplies. In 2010, 8 feet was reported in the approach and 6 feet alongside.

(70) Alligator River and Little Alligator River are discussed in more detail in chapter 4.

(71) The route of the waterway passes from Alligator River to the **Alligator River-Pungo River Canal**, at **Mile 105.0,** a land cut extending about 21 miles in a southwesterly direction. At **Mile 113.9**, State Route 94 highway bridge over the canal has a fixed span with a clearance of 65 feet. **Fairfield Canal**, just east of the bridge, is a privately owned land drainage canal which makes off in a southerly direction from the main channel; it is not navigable.

### Caution

(72) Mariners are advised to exercise extreme caution when navigating the Alligator River-Pungo River Canal. Controlling depths, published in the Local Notice to Mariners, are generally for less than the 90-foot project width. Continuous bank erosion is caused by passing boats and tows. Both sides of the canal are foul with debris, snags, and submerged stumps. Navigation near midchannel is recommended unless otherwise specified in Local Notice to Mariners.

(73) Mariners are cautioned that the color of the aids to navigation change after departing the canal and green markers are on the right when proceeding southerly while following the ICW until entering Goose Creek at **Mile 150.0**.

(74) At **Mile 125.8**, the Wilkerson Bridge over the canal has a fixed span with a clearance of 64 feet. The Alligator River-Pungo River Canal enters **Wilkerson Creek** at about **Mile 126.0**. Gasoline is available on the north side of the canal entrance. The route is then through the dredged cut in the creek to **Pungo River**, southwestward and westward to abeam of Belhaven, then southward in Pungo River to Pamlico River.

(75) **Belhaven,** 1.5 miles westward of **Mile 135.8,** is on the northeastern side of the entrance to **Pantego Creek**. The harbor is protected by breakwaters at the creek entrance and is an excellent shelter for small craft. There are marinas and repair facilities in the harbor. (See the small-craft facilities tabulation on chart 11553 for services and supplies available.) The town and the channel into the harbor from Pamlico River are discussed in chapter 4.

(76) From abeam of the light off **Grassy Point** at **Mile 142.3** in the lower part of Pungo River, the route leads for 4.4 miles until 0.7 mile past the light off **Wades Point** on the west side at the mouth of Pungo River; thence across Pamlico River for 3.2 miles to the light at the entrance to Goose Creek.

(77) **Wright Creek,** on the west side of Pungo River at Mile 143.0, and Pamlico River, the approach to the important town of Washington are discussed in chapter 4.

(78) The route of the Intracoastal Waterway follows the dredged channel through **Goose Creek** and its tributary, **Upper Spring Creek,** to the land cut which connects with **Gale Creek** and Bay River.

(79) Mariners are cautioned that the color of aids to navigation change again to red on the right when proceeding southerly while following the ICW starting with the aids marking Goose Creek at about **Mile 149.7.**

(80) The Hobucken (State Routes 33 and 304) fixed highway bridge, crossing the land cut at **Mile 157.2,** has a clearance of 65 feet. There are several small-craft facilities on both sides of the land cut in the vicinity of the bridge; gasoline, diesel fuel, water, ice, and berthage with electricity are available. Engine repairs can be made at one of the facilities. Depths of 5 to 10 feet are reported alongside the berths in 1983. **Hobucken Coast Guard Station** is on the west side of the land cut just north of the bridge.

(81) The town of **Hobucken,** about 1 mile east of the bridge, has a landing on **Jones Bay,** which is discussed in chapter 4.

(82) From Gale Creek, the route of the Intracoastal Waterway is down **Bay River** to Neuse River Junction Light NR (35°08'47"N., 76°30'11"W.) off **Maw Point Shoal** at **Mile 167.1,** then up the Neuse River. Bay River is the approach to Bayboro and other small towns; Neuse River is the approach to the important city of New Bern. Both rivers are discussed in chapter 4.

(83) Westward of **Mile 171.5** is the entrance to **Broad Creek**. The channel is marked by a light and daybeacons.

## Chart 11541

(84) **Whittaker Creek**, northwestward of the waterway at **Mile 180.8,** is marked by lights and daybeacons. In 2003, the privately dredged entrance channel had a reported controlling depth of 6.1 feet. Several small-craft facilities are in the creek. (See the small-craft facilities

tabulation on chart 11541 for services and supplies available.)

(85) The town of **Oriental** is west of **Mile 181.3** on the north side of Neuse River opposite **Garbacon Shoal**. Fuel and supplies are available here. The town and its waterfront are discussed in chapter 4.

(86) The Intracoastal Waterway leaves Neuse River about 15 miles above the mouth and follows a dredged channel through Adams Creek to **Adams Creek Canal,** a land cut about 5 miles long which connects with the head of **Core Creek**. A marina, through a canal on the west side of the waterway, at **Mile 194.2**, has berths, electricity, gasoline, diesel fuel, water, ice, pump-out station, marine supplies, launching ramp and wet storage. In 2009, the reported approach depth was 5 feet with 4 feet alongside. State Route 101 highway bridge over Adams Creek Canal at **Mile 195.8** has a fixed span with a clearance of 65 feet. Overhead power cables just below the bridge have a clearance of 85 feet. Small-craft facilities on the east side of the waterway at **Mile 197.3** have berths, electricity, gasoline, diesel fuel, pump-out, water, ice and wet and dry storage. A lift to 60 tons is available; hull, engine and electronic repairs can be made. In 2010, the reported approach and alongside depths were 12 feet.

(87) From Core Creek, the route of the Intracoastal Waterway is through **Newport River** to Morehead City. At **Gallants Channel** branches off from the through route of the waterway and leads to Beaufort, which is described in chapter 5.

(88) **Calico Creek** extends westward from **Mile 203.6** through a dredged channel which leads to a basin and marina about 0.6 mile from the waterway. In 2009, the controlling depth was 8 feet in the channel; thence 5 feet reported in the basin. The channel is marked by a buoy and daybeacons. Berthage with electricity, gasoline, diesel fuel, water, ice, pump-out station, wet storage and marine supplies are available. Engine, and electronic repairs can be made. A barge repair facility is on the northwest side of the basin; this facility is described in chapter 5.

(89) At **Mile 203.8,** the adjacent Beaufort and Morehead railroad bridge and U.S. Route 70 highway bridge cross the channel. The highway bridge has a fixed span with a clearance of 65 feet, and the railroad bascule span has a clearance of 4 feet. (See **117.1 through 117.59 and 117.822,** chapter 2, for drawbridge regulations.) An overhead power cable between the two bridges has a clearance of 88 feet, and an overhead power cable southward of the highway bridge has a clearance of 25 feet except at the channel where it is submerged. Caution is advised when running with a fair current or approaching the bridges in windy weather. (See the Tidal Current Tables for predictions.)

### Caution

(90) Just southward of these bridges the route of the waterway passes through the deepwater turning basin at Morehead City. Small-craft operators are cautioned that large oceangoing vessels may be engaged in docking or undocking maneuvers in the basin. The turns off the North Carolina State Ports Authority are blind for craft traveling in either direction on the waterway.

(91) **Morehead City, Mile 204.3,** and its deepwater port are discussed in length in chapter 5. At **Mile 204.7,** a dredged channel leads northward from the waterway thence westward along the south side of the city and rejoins the waterway at **Mile 206.0.** A turning basin is about midlength of the channel. In 2009, the controlling depths were 4.0 feet from the east entrance to the turning basin, thence 3.1 feet in the basin, thence 4.0 feet to the west entrance. The channel is marked by daybeacons. There are several small-craft facilities in Morehead City and vicinity. (See the small-craft facilities tabulation on chart 11541 for services and supplies available.) Hotel and motel accommodations are available in the city.

(92) From Morehead City the waterway follows a dredged channel through **Bogue Sound.** The Atlantic Beach-Morehead City (State Route 1182) fixed highway bridge over Bogue Sound at **Mile 206.7** has a clearance of 65 feet. Caution is advised when running with a fair tide or approaching the bridge in windy weather. (See the Tidal Current Tables for predictions.) A power cable about 100 yards west of the bridge has a clearance of 49 feet (91 feet at main channel).

(93) The summer resorts, **Money Island Beach, Mile 205.7,** and **Atlantic Beach, Mile 207.0,** are at the south end of the bridge, 2 and 3 miles, respectively, west of Fort Macon. The buildings at the beaches are conspicuous. Boats reach the beaches through two dredged channels that branch off from the Intracoastal Waterway at **Mile 205.5. Money Island Channel** leads southwest to the beach, and **Causeway Channel** leads west to the causeway, thence south along the east side of the causeway to the beach. The channels are well marked. In 2011, the controlling depth was 2 feet in Causeway Channel; thence in 2010, 5 feet in Money Island Channel between the junction light at the entrance and Light 5. There are several piers at the beaches where berthage with electricity, gasoline, diesel fuel, water, ice, wet and dry storage, launching ramps, and marine supplies are available; hull, engine and electronic repairs can be made. Caution should be exercised in approaching these channels from the Intracoastal Waterway because of the shoal area off the entrance.

(94) At **Mile 209.2**, a dredged channel extends northward from the waterway into **Peletier Creek**. In 2009, the channel had a controlling depth of 3 feet and is marked by daybeacons. Several small-craft facilities in the creek can provide berthage with electricity, gasoline, diesel fuel, water, ice, wet and dry storage, launching ramps, and marine supplies. Lifts to 60 tons are available; hull, engine and electronic repairs can be made.

(95) In **Spooner Creek**, **Mile 210.5**, on the north side of Bogue Sound 3.8 miles west of Atlantic Beach highway

bridge, there is a marina with 8 feet of water reported in 2002 alongside the piers. Berthage with electricity, gasoline, diesel fuel, water, ice, and wet storage are available. In 2000, 6 feet was reported in the marked entrance channel. A 60-ton mobile lift is available for hull, engine, and electronic repairs.

(96) A fixed highway bridge with a clearance of 65 feet crosses the waterway at **Mile 226.0.**

(97) At **Bogue Inlet,** the waterway passes around the head of the marshes to **Swansboro, Mile 228.9.** A water tank in town is prominent. A side channel with a controlling depth of about 12 feet branches off from the Intracoastal Waterway at **Mile 228.9** near Light "46C" and extends along the waterfront of Swansboro and to a turning basin near the highway bridge. There are small-craft facilities along the waterfront and close to Swansboro. (See the small-craft facilities tabulation on chart 11541 for services and supplies available.)

(98) From Swansboro, the route of the waterway follows cuts through the marshes to New River. At **Cow Channel,** marked by daybeacons, leads southeastward from the waterway to Hammocks Beach State Park on Bear Island where picnicking and primitive camping are permitted. Small craft may dock at the two ferry slips located at the park. **Prohibited and danger areas** are along the waterway from **Mile 235.1 to mile 240.7.** (See **334.440 (e) and (f),** chapter 2, for limits and regulations.) A **safety zone** is along the waterway from **Miles 235.2 to Mile 245.2**. (See **165.514**, chapter 2, for limits and regulations.) A highway bridge at **Mile 240.7,** (locally known as Onslow Beach bridge), has a swing span with a clearance of 12 feet; the northwest draw only is used. An overhead power cable on the north side of the bridge has a clearance of 74 feet.

(99) At **Mile 244.5,** a channel marked by daybeacons leads to a turning basin at the Marine Corps facility at the head of **Mile Hammock Bay.** In 2001, the controlling depths were 12 feet in the entrance channel and 11.5 feet in the turning basin. At **New River Inlet** the waterway passes around the head of the marshes in New River to the land cuts southward. **New River** is the approach to the town of Jacksonville, described in chapter 5. Except at slack water, dangerous cross currents will be encountered in crossing the inlet.

(100) At **Swan Point, Mile 247.0,** just south of New River Inlet, is a marina with berths, electricity, gasoline, diesel fuel, launching ramp, water, ice, and wet and dry storage available. An 40-ton lift is available for hull and engine repairs.

(101) The route continues through **Alligator Bay** and **Stump Sound**. At **Mile 252.3,** a fixed highway bridge with a clearance of 65 feet crosses the waterway. An overhead power cable with a clearance of 85 feet is close southwestward of the bridge. State Routes 50-210 highway bridge at **Mile 260.7** has a swing span with a clearance of 12 feet. (See **117.1 through 117.59 and 117.821**, chapter 2, for regulations.) The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign KU-6044. The overhead power cable at the bridge has a clearance of 81 feet.

(102) A bulkhead, used for berthing and with reported depths of 9 feet alongside in 2009, extends from just north of to just south of the highway bridge at **Mile 260.7**. Gasoline, diesel fuel, water, electricity, pump-out, and some marine supplies may be obtained. Electrical and engine can be made.

(103) From Stump Sound the Intracoastal Waterway leads through **Topsail Sound** and **Middle Sound.** At **Mile 263.7,** a channel leads southeastward from the waterway thence southwestward along the barrier beach in Topsail Sound. The channel and the facilities along the barrier beach are described in chapter 5.

(104) At **Mile 266.3**, a marina on the north side of the waterway has berths, electricity, gasoline, diesel fuel, water, ice, and a pump-out station. In 2009, 8 feet was reported alongside.

(105) At **Mile 270.0,** a marked channel leading eastward connects the waterway with **New Topsail Inlet.**

(106) The Figure Eight Island highway swing bridge (locally known as Surf City bridge) with a clearance of 20 feet crosses the waterway at **Mile 278.1.** The bridgetender can be contacted on VHF-FM channels 13 and 16.

(107) **Pages Creek,** on the north side of the waterway at **Mile 279.0,** has a yacht basin with an L-shaped pier about 250 feet long. Gasoline, water, ice, launching ramp, and wet and dry storage are available. Hull and engine repairs can be made. At **Mile 279.8,** on the north side of the waterway, there is a yacht basin where berthage, water, and electricity are available. A 25-ton lift and a marine railway are available for hull, engine, and electrical repairs.

(108) U.S. Route 74-76 highway bridge over the waterway at **Wrightsville, Mile 283.1,** has a bascule span with a clearance of 20 feet at the center. (See **117.1 through 117.59 and 117.821**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, KU-6043. Overhead power and TV cables at the bridge have a least clearance of 78 feet.

(109) There are several small-craft facilities southward of the bridge at Wrightsville. These facilities have berthage with electricity, gasoline, diesel fuel, water, ice, pump-out station, wet and dry storage, and marine supplies and can make hull, engine and electronic repairs.

(110) At **Mile 284.0,** a privately dredged channel leads westward from the waterway to a basin in **Bradley Creek.** In July 2004, the reported controlling depth was 8 feet in the channel and 7.5 feet in the basin. A small-craft facility with piers is on the south side of the basin. Berthage with electricity, gasoline, diesel fuel, water, ice, some marine supplies, and a 40-ton mobile hoist are available. Hull, engine, and electronic repairs can be made. **Wrightsville Beach** on the outer coast, and **Masonboro Inlet** are discussed in chapter 5.

(111) From Wrightsville the waterway continues south through **Masonboro Sound** and **Myrtle Grove Sound.**

## Chart 11534

(112) The Intracoastal Waterway continues down Myrtle Grove Sound to Snows Cut. The shallow channel from the waterway to Carolina Beach at the south end of Myrtle Grove Sound is discussed in chapter 5.

(113) At **Mile 293.8,** a marina on the west side of Myrtle Grove Sound opposite Carolina Beach Inlet has gasoline, diesel fuel, water, ice, and marine supplies. A 25-ton mobile lift that can handle boats to 50 feet is available for hull, engine, and electronic repairs. An alongside depth of 5 feet was reported in 2001.

(114) **Snows Cut** connects Myrtle Grove Sound with Cape Fear River. U.S. Route 421 highway bridge over Snows Cut at Mile **295.7** has a fixed span with a clearance of 65 feet. Overhead power cables 0.1 mile west of the bridge have a clearance of 68 feet. The ebb current is 1.0 knots, and the flood current is 1.2 knots. (For predictions, see the Tidal Current Tables.) A marina at the junction of Snows Cut and the Cape Fear River provides gasoline, diesel fuel, berthing, water, ice, electricity, pump-out, and engine repairs. In 2009, an alongside depth of 6 feet was reported.

(115) From the western end of Snows Cut, the Intracoastal Waterway leads south-southwestward through a dredged channel to a junction with the main channel of Cape Fear River and thence southward to **Southport** where fuel, supplies, and repair facilities are available. In 2006, the controlling depth in the dredged Intracoastal Waterway channel to the Cape Fear River junction was 7.7 feet (8.4 feet at midchannel). Mariners are cautioned that the color of the aids to navigation change and green markers are on the right while following the ICW until entering the channel south of Southport at **Mile 308.9.** It has been reported that at night some mariners have missed the turn at the junction in Cape Fear River due to the bright lights on the piers at the Sunny Point Army Terminal and the lighted aids marking the channel leading alongside the terminal; caution is advised.

(116) Another dredged channel, known as **Wilmington Short Cut** and marked by lights and daybeacons, leads northward from the western end of Snows Cut for about 1.7 miles where it connects with the main channel in Cape Fear River to the city of Wilmington, about 11.5 miles above Snows Cut. In 2010, the controlling depth was 2.1 feet (3.1 feet at midchannel) in Wilmington Short Cut. Wilmington and Southport are discussed in chapter 5.

(117) At Southport, **Mile 308.9**, the route of the Intracoastal Waterway leaves Cape Fear River and proceeds westward through land cuts to Lockwoods Folly River. Mariners are cautioned that the color of aids to navigation change to red marker on the right while following the ICW at the entrance to the land cuts. It has been reported that some mariners have attempted to enter the land cut by passing southward of the light at the entrance thereby going aground.

(118) At **Mile 309.3,** a marina in a basin on the north side of the waterway provides berths with electricity, gasoline, diesel fuel, water, ice, marine supplies, a launching ramp, wet and dry storage, pump-out station and a 75-ton lift. Engine, radio and electronic repairs are available. In 2009, a depth of 7 feet was reported alongside the berths.

(119) At **Mile 311.3**, a marina on the west side of the waterway provides berths with electricity, gasoline, diesel fuel, water, ice, pump-out station and wet storage. In 2009, an alongside depth of 10 feet was reported.

(120) At **Mile 311.8,** a fixed highway bridge with a clearance of 65 feet crosses the waterway. An overhead power cable on the east side of the bridge has a clearance of 90 feet.

(121) At **Mile 313.8,** on the south side of the waterway opposite Beaverdam Creek, there is a yacht basin with a 200-foot pier with reported depths of 6 feet alongside. Berthage with electricity, gasoline, diesel fuel, water, ice, a launching ramp, and some marine supplies are available, and hull and engine repairs can be made. At **Mile 315.0**, a marina with a reported approach and alongside depth of 7 feet in 2010, has berths, electricity, gasoline, diesel fuel, water, ice, pump-out station, marine supplies, and dry storage. A 20-ton lift is available and hull, engine and electronic repairs can be made.

(122) At **Mile 316.6**, an overhead power cable with a clearance of 90 feet crosses the waterway.

(123) In **Lockwoods Folly River,** the waterway passes around the head of marshes just inside Lockwoods Folly Inlet. A small-craft facility off the waterway and about 0.4 mile southward of **Mile 320.0** has a launching ramp, berths with electricity, gasoline, diesel fuel, water, ice, and some marine supplies. A 3-ton fixed lift is also available, and hull and engine repairs can be made. In 2008, the reported approach depth was 3.5 feet.

(124) From **Mile 323.3** to **Mile 324.0**, there are numerous small-craft facilities on both sides of the waterway. Berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, ramps and wet and dry storage are available. A 7.5-ton lift and hull and motor repairs are available.

(125) State Route 130 highway bridge over the waterway at **Holden Beach, Mile 323.6,** has a fixed span with a clearance of 65 feet.

(126) An overhead power cable with a clearance of 85 feet crosses the waterway at **Mile 327.3.**

(127) The waterway passes around the head of the marshes inside **Shallotte Inlet** and proceeds westward by way of cuts through the marshes and sloughs. **Shallotte River, Mile 329.5,** causes strong currents and severe shoaling in the waterway.

(128) A marina at **Bowen Point**, locally known as **Shallotte Point, Mile 329.6** has berths with electricity,

gasoline, water, ice, and wet and dry storage available. Hull and engine repairs can be made. The facility in Shallotte River is also discussed in Chapter 6.

(129) At **Mile 333.7,** State Route 904 highway bridge crosses the waterway. It has a fixed span with a clearance of 65 feet. An overhead power cable close eastward of the bridge has a clearance of 85 feet. On the south side of the waterway, just east of highway bridge, is a canal with two small-craft facilities. Gasoline, diesel fuel, water, ice, marine supplies, launching ramps and wet storage are available. At **Mile 335.6**, on the north side of the waterway is a marina with berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, a launching ramp and wet and dry storage. Hull, engine and electronic repairs can be made. At **Mile 337.9**, a pontoon bridge (locally known as Sunset Beach bridge) crosses the waterway. The bridge is operated by cables that are suspended above or just below the water when the bridge is being opened or closed. The cables are dropped to the bottom when the bridge is in a fully opened or fully closed position. Warning signs with red letters on a white background are on the ends of the fenders on each side of the bridge. Extreme caution should be exercised in the area of the bridge. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, KU-6040. (See **117.1 through 117.59 and 117.821 (b) (6),** chapter 2, for regulations.) In 2009, a fixed highway bridge was under construction with a design clearance of 65 feet; upon completion it will replace the pontoon bridge. An overhead power cable just east of the bridge has a clearance of 85 feet.

(130) The **North Carolina-South Carolina State Line** crosses at **Mile 340.8** just before the waterway enters Little River.

(131) The waterway joins **Little River** at **Calabash River** extends northeastward from Little River just north of the waterway cutoff and southward to connect the waterway with Little River Inlet. In 2008, the controlling depth was 2.9 feet to the town of Calabash, NC, 0.6 mile **Calabash,** NC, 0.6 mile above the entrance. The channel is marked by lights and daybeacons.

(132) The town of **Little River,** SC, at **Mile 344.3,** has considerable pier space along its waterfront. Berths with electricity, gasoline, diesel fuel, water, ice, and marine supplies are available; engine repairs can be made. The mean range of tide at Little River is about 5 feet. A marina at **Mile 345.0**, on the north side of the waterway, has berths, electricity, gasoline, diesel fuel, water, ice, pump-out station, nautical supplies, and wet and dry storage; hull, engine and electronic repairs can be made. In 2010, the reported alongside depth was 6.5 feet.

(133) A marina on the north side of the waterway at **Mile 346.3** has berths, gasoline, diesel fuel, a pump-out station, water, ice, marine supplies, and wet storage. In 2010, the reported alongside depth was 10.5 feet. A yacht basin is off the south side of the waterway at **Mile 347.0**. In 2010, a depth of 8 feet was reported alongside. Electricity, gasoline, water, ice, pump-out station, wet storage, and marine supplies are available; hull, engine, and electronic repairs can be made.

(134) In 1983, numerous rock ledges were reported abutting the deep portion of the waterway from **Mile 347.0** to **Mile 365.5**. Extreme caution is advised when transiting the area.

(135) A fixed highway bridge, with a clearance of 65 feet at the center, crosses the waterway at **Mile 347.2**. U.S. Route 17 highway bridge (locally known as Little River bridge) over the waterway at **Mile 347.3** has a swing span with a clearance of 7 feet. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, KT-5433. Overhead power and telephone cables, crossing the waterway from immediately westward to 1 mile westward of the swing bridge, have a least clearance of 69 feet.

(136) At **Mile 348.3**, a fixed highway bridge with a clearance of 65 feet crosses the waterway.

(137) From Little River, the waterway follows a long land cut southwestward to Socastee Creek and Waccamaw River.

(138) At **Mile 353.3**, a swing bridge with a clearance of 31 feet crosses the waterway.

(139) At **Mile 355.5**, a fixed bridge with a clearance of 65 feet crosses the waterway.

(140) An overhead cable car crosses the waterway at **Mile 356.4.** The low point of travel of the cabin is not less than 67 feet. An overhead power cable with a clearance of 85 feet is 0.1 mile northwest of the cable car.

(141) At **Mile 358.3**, a fixed highway bridge with a clearance of 65 feet crosses the waterway.

(142) An overhead power cable with a clearance of 85 feet crosses the waterway at **Mile 358.9**.

(143) At **Mile 360.5** a fixed highway bridge with a reported clearance of 65 feet crosses the waterway.

(144) An overhead power cable with a clearance of 91 feet crosses the waterway at **Mile 363.8.**

(145) At **Mile 365.4,** the Seaboard Coast Line Railroad bridge has a bascule span with a clearance of 16 feet. Close westward, U.S. Route 501 highway bridge to Myrtle Beach has a fixed span with a clearance of 65 feet. Overhead cables at the bridges and for about 0.25 mile southwestward have a minimum clearance of 80 feet.

(146) In 2008, a fixed bridge was under construction at **Mile 366.4** with a design clearance of 65 feet.

(147) An overhead power cable with a clearance of 85 feet crosses the waterway at **Mile 370.5.**

(148) State Route 544 highway bridge over the waterway at **Socastee, Mile 371.0,** has a swing span with a clearance of 11 feet; navigation is through the southeast draw. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, KT-5438, preceded by bridge name. At **Mile 371.1**, a fixed highway bridge with a reported clearance of 65 feet crosses the waterway. Overhead power cables in the vicinity of the bridge have a minimum clearance of 85 feet.

(149) A marina at **Mile 373.2**, has diesel fuel, electricity, gasoline, water, ice, wet and dry storage, pump-out,

berths, and marine supplies. In 2011, 9 feet was reported in the approach and alongside.

(150) The route of the waterway enters **Waccamaw River** at **Enterprise Landing, Mile 375.2,** and follows the river to Winyah Bay. The direction of flow of the current in the waterway changes at Enterprise Landing.

(151) **Bucksport,** on the west side of Waccamaw River at **Mile 377.5,** has a yacht basin where berths with electricity, gasoline, water, ice, pumpout, marine supplies, wet storage, and a launching ramp are available. In 2010, 15 feet was reported in the approach and alongside.

(152) A yacht basin at **Wachesaw Landing, Mile 383.4,** about 6 miles south of Bucksport, has berthage with electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out, and wet and dry storage available. Hull, engine and electronics repairs can be made. In 2011, a depth of 10 feet was reported alongside the berths. At **Mile 394.4**, a marina on the east side of the waterway has berths, electricity, water, ice and pump-out station available.

(153) U.S. Route 17 highway bridge over the Waccamaw River at **Mile 402.1,** has a fixed span with a clearance of 65 feet for a width of 90 feet. Mariners are cautioned that the color of aids to navigation change to green on the right while following the ICW at the confluence of the Waccamaw, Great Pee Dee, and Sampit Rivers at **Mile 403.9** until about Mile 406.0 where the waterway splits with Winyah Bay main channel.

(154) **Georgetown Coast Guard Station** is on the west bank of the Great Pee Dee River about 0.25 mile south of U.S. Route 17 highway bridge.

(155) **Georgetown, Mile 403.0,** at the head of Winyah Bay and just inside the mouth of **Sampit River,** is about a mile northwestward of the waterway. Supplies, hotel accommodations, and repair facilities are available at Georgetown. The town is discussed at greater length in chapter 6.

(156) Mariners are cautioned that the color of aids to navigation change back to red on right where the waterway splits with Winyah Bay main channel at about **Mile 406.0.**

(157) The Intracoastal Waterway leaves Winyah Bay by way of **Western Channel** at **Mile 407.3**, and proceeds southward through the **Estherville-Minim Creek Canal** at **Mile 410.6**. A ferry crosses the canal at **Mile 411.5**. Southwest of the canal, the waterway crosses **North Santee River** and **South Santee River** and proceeds by way of cuts through the marshes to the vicinity of **Casino Creek** (**Mile 425.5**).

## Chart 11518

(158) **Cape Romain National Wildlife Refuge** comprises the coastal area southeast of the waterway from Casino Creek to **Price Creek (Mile 446.8).**

(159) From the vicinity of Casino Creek the waterway continues through the marshes and a land cut to the mouth of **Jeremy Creek** (Mile 430.0). **McClellanville** is on the side channel through Jeremy Creek, 0.6 mile northward of the waterway. Boats lie alongside the piers on the east side of the McClellanville channel. In 2010, the controlling depth was 5 feet. Gasoline, diesel fuel, water, and provisions are available.

(160) Mariners may gain access to the Atlantic Ocean via the marked channels in Town Creek, opposite McClellanville, and **Five Fathom Creek.** This route is reportedly used by fishing vessels.

(161) From McClellanville the waterway follows land cuts and sloughs through the marshes back of **Bulls Bay;** thence through shoal **Sewee Bay** and along **Price Creek;** through the marshes and along **Capers Creek;** behind **Dewees Island** and across **Dewees Creek** to the land cuts behind **Isle of Palms** and Sullivans Island. A ferry crosses the waterway at **Moores Landing** at **Mile 445.4.**

(162) A marina is on the south side of the waterway at **Mile 456.8**. Berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out station, launching ramp, and dry storage are available. In 2010, the reported approach depth was 8 feet.

(163) At **Mile 458.9,** the Isle of Palms Connector is a fixed highway bridge with a clearance of 65 feet.

(164) An overhead power cable with a clearance of 86 feet crosses the waterway at **Mile 459.3.**

(165) On **Hamlin Creek** opposite **Mile 460.5,** east of **Breach Inlet,** there is a marina where berthage, electricity, gasoline, and water are available. An overhead power cable with a clearance of 94 feet crosses Hamlin Creek. A fixed highway bridge with a clearance of 28 feet crosses Hamlin Creek near its eastern mouth. The several outlets to the ocean along this stretch are described in chapter 6.

(166) Ben Sawyer Memorial (State Route 703) highway bridge to **Sullivans Island** over the waterway at **Mile 462.2** has a swing span with a clearance of 31 feet. (See **117.1 through 117.59 and 117.911**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, KT-5438. The overhead power cable at the bridge has a clearance of 89 feet. A marina is in the creek on the west side of the waterway just above the bridge and provides berths with electricity, gasoline, diesel fuel, pump-out, water, ice, marine supplies, and wet storage. In 2009, the reported approach and alongside depth was 10 feet.

(167) The route of the waterway enters the lower east side of **Charleston Harbor** between Sullivans Island and the town of **Mount Pleasant,** which is about 1 mile north of the waterway and is reached through a well-marked channel that branches off from the waterway at **Mile 464.2.**

(168) Complete supply and repair facilities are available at **Charleston, Mile 469.0.** The city is described at length in chapter 6.

(169) The route of the waterway leaves Charleston Harbor at **Mile 469.3** by way of **Wappoo Creek.** The James

Island Expressway fixed highway bridge, with a clearance of 67 feet, crosses the waterway at **Mile 469.9.** State Route 171 highway bridge over Wappoo Creek at **Mile 470.8** has a bascule span with a clearance of 33 feet at the center. (See **117.1 through 117.59 and 117.911**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign KT-5438. Extreme caution is advised when running through the bridge with a current. In 1983, mooring dolphins were reported to be on both sides of the bridge. An overhead power cable with a clearance of 100 feet is close westward of the bridge. Cross currents from the old creek are encountered on the ebb in the west approach, and are noticeable on the flood in the east approach due to the bends in the channel. Vessels should proceed slowly and with caution to avoid washing away of the banks east of the bridge.

(170) From Wappoo Creek, the route of the waterway is through **Elliott Cut** and **Stono River** to Wadmalaw River. Strong currents have been reported on the ebb and flood in Elliott Cut. At **Mile 472.0** is an overhead power cable with a clearance of 100 feet. An overhead power cable at **Mile 475.6** has a clearance of 91 feet over the main channel. A marina is on the south side of the waterway at **Mile 476.4.** The marina has facilities for hull, engine, electronic, and electrical repairs, water and shore power connections, a 30-ton lift, gasoline and diesel fuel, and a marine railway that can handle craft up to 1,000 tons or 200 feet long.

(171) An overhead power cable at **Mile 479.0** has a clearance of 91 feet.

(172) The John F. Limehouse Highway Bridge over Stono River at **Mile 479.3** has a fixed span with a clearance of 65 feet. The overhead power cable at the bridge has a clearance of 92 feet. Caution is advised when running through the bridge with a current. A slight cross current is noticeable on the flood and ebb at both approaches.

(173) At **Rantowles Creek** enters from the north (see chart 11521). The Seaboard System Railroad (SCL) bridge 0.6 mile above the mouth has a 41-foot lift span which is not required to be opened; clearance in the down position is 4 feet. (See **117.1 through 117.59 and 117.935**, chapter 2, for drawbridge regulations.) About 1.3 miles above the mouth U.S. Route 17 highway bridge has twin 37-foot fixed spans with clearances of 9 feet. **Wallace Creek** enters Rantowles Creek from the west 0.1 mile above the railroad bridge. State Route 162 highway bridge, 0.7 mile above the mouth of Wallace Creek, has twin 38-foot fixed spans with clearances of 9 feet. Overhead cables between the mouth and the bridge have a minimum clearance of 8 feet.

(174) The route of the waterway enters **Wadmalaw River** at **Mile 486.7**. The town of **Yonges Island** is at **Mile 490.2**. A boatyard at the town has marine railways that can handle craft up to 150 feet long and 350 tons, and mobile cranes up to 40 tons. The maximum draft at the railways is 12 feet.

(175) From Wadmalaw River, the route of the waterway follows **Dawho River**, **North Creek**, and **Watts Cut** to South Edisto River. State Route 174 (Dawho bridge-locally known as Whooping Island bridge) highway bridge over Dawho River at **Mile 501.3** has a fixed span with a clearance of 65 feet. An overhead power cable just west of the bridge has an authorized clearance of 98 feet. In 1999, it was reported that the overhead power cable has sagged to a clearance of 40 feet. Extreme caution is advised when passing under the bridge with a current. Cross currents from Dawho River are encountered on the ebb in the west approach and are noticeable on the flood in the east approach.

(176) Careful steering is required in the Dawho River between **White Point** and the entrance to the cutoff. The channel is well marked, but strong currents are experienced. Strong currents are also found at the crossings of the cutoff with the river.

(177) The waterway follows **South Edisto River** from Watts Cut to **Fenwick Cut,** thence along the **Ashepoo River** for a short distance to **Ashepoo-Coosaw Cutoff,** thence along the **Coosaw River** to Brickyard Creek.

(178) The entrance to **Brickyard Creek** near Brickyard Point, **Mile 529.1,** is between marshy shores, but the marsh on the south side is narrow and terminates just inside the creek in a red eroded bank leading up to somewhat higher ground; this bank is visible for some distance along the Coosaw River.

(179) On the west side of Brickyard Creek at **Mile 531.8,** and about 4 miles north of the swing bridge at Beaufort, there is a Marine Corps Air Station fuel pier. In 1981, depths of 16 feet were reported alongside.

(180) **Albergottie Creek, Mile 532.4,** about 3.4 miles north of the swing bridge at Beaufort, runs in a westerly direction from the junction with Beaufort River and Brickyard Creek. In 1983, the creek had a reported controlling depth of 3½ feet to the Marine Corps Air Station pier on the north side 0.7 mile above the mouth, thence 5 feet to a point 2 miles above the mouth. The Marine Corps pier had depths of 8 to 10 feet reported alongside in 1983.

(181) The waterway continues along Brickyard Creek and into **Beaufort River.** On the west side of the waterway at **Mile 536.0** is the town of **Beaufort,** where berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out station, and wet storage are available. In 2010, the reported alongside and approach depth was 16 feet. The town is described at length in Chapter 7.

(182) The Ladies Island (U.S. Route 21) highway bridge over Beaufort River at Beaufort has a swing span with a clearance of 30 feet. (See **117.1 through 117.59 and 117.911**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign, KT-5439. Extreme caution is advised when running through the bridge with a current; cross currents are encountered in the approach on flood and ebb.

(183) A fixed highway bridge with a clearance of 65 feet crosses the waterway at **Mile 539.7**. A marina, about 100 yards north of the bridge on the west shore, has berths. electricity, gasoline, diesel fuel, water, ice, pump-out station and marine supplies available. Hull and engine repairs are locally available.

(184) The waterway follows Beaufort River past **Port Royal, at Mile 541.5,** and into **Port Royal Sound,** which is described at length in chapter 7.

(185) Mariners are cautioned that the color of the aids to navigation change to green on the right while following the ICW at **Mile 541.7** until the waterway enters Port Royal Sound.

## Chart 11507

(186) The color of the aids to navigation change to red on the right while following the ICW when entering Port Royal Sound at about **Mile 547.9**. After crossing Port Royal Sound, the route of the waterway enters **Skull Creek** at **Mile 553.3** and follows it to **Calibogue Sound,** thence down the sound to the mouth of Cooper River. **Seabrook Landing,** on the south side of Skull Creek, is at **Mile 553.6**. At **Mile 554.8** on the east side of Skull Creek, there is a small-craft facility where berths with electricity, gasoline, diesel fuel, water, ice, pump-out station, wet storage, and a 30-ton lift are available. Hull, engine, and electronic repairs can be made. In 2011, the reported approach and alongside depth was 10 feet.

(187) At **Hilton Head Harbor, Mile 557.0,** on the south side of Skull Creek, there is a small-craft facility where berths with electricity, gasoline, diesel fuel, water, ice, launching ramp, and wet storage are available. A county pier with a reported depth of 8 feet alongside in June 1983, is at Hilton Head Harbor.

(188) At **Mile 557.6,** the twin fixed spans of the U.S. Route 278 highway bridge have a clearance of 65 feet. During the flood tide, vessels will encounter a strong cross current on the north side of the bridge, and should exercise caution when approaching the bridge from the northward. Dense fog is frequently encountered in this vicinity. An overhead power cable near the bridge has a clearance of 91 feet. A small-craft facility at **Mile 558.4** has berths with electricity, gasoline, diesel fuel, pump-out station, launching ramp and wet storage. In 2011, the reported approach depth was 6 feet.

(189) Small-craft facilities on Broad Creek and at Harbour Town on Hilton Head Island, eastward of the waterway at about **Mile 564.3,** are discussed in chapter 7.

(190) The route follows **Cooper River** to Ramshorn Creek at **Mile 568.6**. An overhead power cable with a clearance of 55 feet crosses Cooper River 1.8 miles northward of its junction with Ramshorn Creek. At **Mile 569.2** an overhead power cable crossing **Ramshorn Creek** has a clearance of 86 feet. An overhead power cable, about 0.4 mile W of Ramshorn Creek across an unnamed creek between Page Island and Pine Island, has a reported clearance of 20 feet. The tides meet in Ramshorn Creek. Between the creek and Walls Cut the route follows **New River.** Care is required as cross currents may be encountered in New River.

(191) **Walls Cut** is at **Mile 572.4**. The route is through the cut and along **Wright River** for a short distance, thence through **Fields Cut** and into Savannah River at **Mile 575.6.** The Savannah River ebbs through the cut, and strong cross currents may be experienced at the ends of it; these currents cause a shoal to build up and encroach from westward at the east end of the cut. (For predictions, see the Tidal Current Tables.)

(192) **Savannah River** is the approach to the important city of **Savannah**, about 8 miles upstream from the Intracoastal Waterway crossing. Savannah has complete supply and repair facilities, and is described at length in chapter 7. The only small-craft facilities at Savannah are at the Municipal Dock; water and electricity are available. The nearest facilities where other services may be obtained are at Thunderbolt and Isle of Hope.

(193) Daily predictions for Savannah River are published in the Tidal Current Tables.

(194) The Intracoastal Waterway leaves the Savannah River at **Mile 576.2** and enters **Elba Island Cut,** which leads into **St. Augustine Creek.** In 1990, rocks awash were reported on the south side of the junction of Elba Cut and Savannah River in about 32°04'16"N., 80°58'15"W. At the junction of St. Augustine Creek and **Wilmington River, Mile 578.3,** a cutoff channel extends northeastward from the waterway to Savannah River South Channel, thence along the southern side of Elba Island to a junction with Savannah River; the cutoff channel is marked by daybeacons and buoys, and in 1983, the reported controlling depth was 5 feet. A fixed highway bridge with a clearance of 35 feet crosses the cutoff channel from Elba Island. An overhead power cable with a clearance of 60 feet is immediately south of the bridge.

(195) The Sam Varnedoe (Island Expressway) highway bridges (locally known as Causton Bluff bascule bridges) crossing Wilmington River at **Mile 579.9** has a bascule span with a clearance of 21 feet. (See **117.1 through 117.59 and 117.353**, chapter 2, for drawbridge regulations.) The bridgetender monitors and works VHF-FM channel 9, and monitors channel 16. No crosscurrents are experienced during either flood or ebb; the currents follow the direction of the channel. Overhead power cables close northward and southward of the bridge have a reported minimum clearance of 72 feet.

(196) State of Georgia Memorial Bridge (U.S. Route 80) highway bridge over Wilmington River at **Mile 582.8** has a fixed span with a clearance of 65 feet.

(197) No cross currents are experienced during either flood or ebb; the currents follow the direction of the channel. Ebb currents flow southward and are very strong. Mooring dolphins for tying-up or breaking-up tows are on both sides of the bridge. When proceeding against the current, a tow may be taken through

without breaking up. When proceeding with the current, a tow should be secured to the dolphin and await a favorable current or be broken up and taken through singly.

(198) **Thunderbolt, Mile 582.8,** is a small town and pleasure resort on the west bank of Wilmington River. There are several marinas and boatyards on both banks of the river where berthage with electricity, pump-out, gasoline, diesel fuel, water, ice, and marine supplies are available. Lifts to 1,150 tons, and several marine railways are also available; the largest railway can handle craft to 75 feet. Hull, engine, and electronic repairs can be made. Bus transportation is available to Savannah.

(199) At **Mile 585.5**, the route leaves the Wilmington River and enters **Skidaway River.**

(200) Turner Creek, about 0.6 mile eastward of the Wilmington River-Skidaway River junction, is described in chapter 8.

(201) **Isle of Hope, Mile 590.0,**is a pleasure resort on the north side of Skidaway River with several small wharves and a marina. The marina has berthage with electricity, gasoline, diesel fuel, water, ice, pump-out, marine supplies, and a lift to 5 tons; engine and electronic repairs can be made. In 2010, 12 feet was reported in the approach and alongside.

(202) A **small-craft anchorage** is in Skidaway River off Isle of Hope. (See **110.179**, chapter 2, for limits and regulations.)

(203) **Skidaway Narrows,** between Skidaway River and Burnside River, is easily navigated by small craft, and by larger vessels when speed is reduced sufficiently to accommodate the sharp turns. The velocity of current in the narrows is about 1 knot. Predictions are given in the Tidal Current Tables. A double-bascule highway bridge with a clearance of 22 feet crosses Skidaway Narrows at **Mile 592.8**. The bridgetender monitors and works VHF-FM channel 9, and monitors channel 16; voice call Skidaway Bridge.

(204) No crosscurrents are experienced during either flood or ebb; the currents follow the direction of the channel.

(205) An overhead power cable immediately southwestward of the bridge has a clearance of 85 feet.

(206) **Vernon View, Mile 596.3,** on the north shore of Burnside River, has several small privately owned piers where gasoline may be obtained in an emergency. In 1983, there were depths of 1 to 7 feet reported at the piers.

(207) At **Mile 596.9,** the Intracoastal Waterway enters **Vernon River.** At **Delegal Creek** empties into the east side of Vernon River. The creek is entered via **Steamboat Cut.** A small-craft facility is on the east side of Delegal Creek about 1.4 miles above the mouth. Berthing with electricity, gasoline, diesel fuel, ice and a pump-out station are available. In 2010, the reported approach depth was 4.5 feet. The waterway enters **Hell Gate** at **Mile 601.4** and continues into **Ogeechee River.** The ebb currents setting out of the Ogeechee River are particularly strong.

(208) The waterway enters **Florida Passage** at **Mile 605.8** and joins **Bear River at Mile 608.5.** The current is swift in the lower part of Bear River.

(209) **St. Catherines Sound, Mile 618.0,** becomes quite rough in moderately bad weather, especially with strong east and northeast winds. Strong cross currents may be encountered during freshets in **Medway River.** The course across St. Catherines Sound is marked by lights and should be followed closely. Failure to do so has resulted in many rescue calls by the Coast Guard.

(210) The waterway leaves St. Catherines Sound through **North Newport River** and at **Mile 623.8** joins **Johnson Creek.** An alternate route leaving the waterway at **Mile 618.0** proceeds through **Walburg Creek** and joins the main route at **Mile 623.1**. Shoaling to 4 feet at low tide was reported in 2010 at the southern junction with the waterway. This alternate route is not marked and is seldom used. Good anchorage can be found in Walburg Creek.

(211) The Intracoastal Waterway leaves Johnson Creek and enters **South Newport River** at **Mile 629.0,** and follows the river to Sapelo Sound at **Sapelo Sound** is somewhat rough when there are strong east or northeast winds. The sound is described in chapter 8.

(212) The route leaves Sapelo Sound through **Sapelo River** and enters **Front River at Mile 639.0.** In 1983, the reported controlling depth was 8 feet for 5 miles up the Sapelo River to a land cut, thence 2 feet through a land cut to just above the landing at **Pine Harbor** (chart 11510).

(213) Continuing down Front River, the waterway passes through **Creighton Narrows** and joins **Old Teakettle Creek** at **Shellbluff Creek** flows into Old Teakettle Creek at **Mile 644.1.** In emergency, gasoline may be obtained at **Valona,** 0.7 mile up **Shellbluff Creek** (chart 11510).

(214) At **Mile 648.3,** the route enters **Doboy Sound,** described in chapter 8. The waterway leaves Doboy Sound via **North River** at **Mile 650.0** and at **Mile 651.8** the route passes **Darien River.**

(215) **Little Mud River** connects the waterway with **Altamaha Sound** at **Mile 655.5.** East of the waterway, **Wolf Island, Egg Island 11507Egg Island,** and **Little Egg Island** make up **Wolf Island National Wildlife Refuge**. The**Altamaha River** enters Altamaha Sound from westward.

(216) The Intracoastal Waterway enters **Buttermilk Sound** at **Mile 660.0** and continues down **Mackay River.**

(217) Two alternate routes branch off the waterway on the Mackay River. The first, at **Mile 665.8**, proceeds down the **Frederica River** past the ruins of **Fort Frederica** (**Oglethorpe Barracks**), now a National Monument, and rejoins the waterway at **Mile 674.2**. In 2004-2006, the reported midchannel controlling depth was 4.4 feet. This first alternate route is not marked.

(218) The second alternate route leaves Mackay River at **Mile 670.7** and enters **Back River,** proceeding down

through **Plantation Creek** to Brunswick River (see chart 11489). This route bypasses St. Simon Sound and is a more sheltered route in easterly weather. In 2004, the midchannel controlling depths were 2.5 feet in Back River and 1.5 feet in Plantation Creek. Although the second alternate route is the shorter to Brunswick, mariners are advised to use Plantation Creek only on the higher stages of the tide. The bridges over Back River are described in chapter 8.

(219) At **Troup Creek** empties into the west side of Mackay River.

(220) At **Mile 674.2**, Frederica River alternate route rejoins the main route in Mackay River and the main route proceeds into St. Simons Sound. At **Mile 674**.5, a fixed highway bridge with a clearance of 65 feet crosses Mackay River to Lanier Island.

## Chart 11489

(221) From Mackay River, the waterway continues through **St. Simons Sound** and **Brunswick River** to Jekyll Creek. About 3.4 miles up Brunswick River from **Mile 679.4** is the city of **Brunswick,** at which hotel accommodations, fuel, supplies, and repair facilities are available. The city is described at length in chapter 8.

(222) The Intracoastal Waterway follows **Jekyll Creek** southward from Brunswick River to Jekyll Sound. The entrance is marked by a lighted range and protected by a jetty on its west side, the outer end of which is marked by a light. Jekyll Island Range Front Light is about 25 yards to the westward of this light. The jetty covers at high tide, but is marked by daybeacons. To enter, be guided by the range, lights, a buoy, and daybeacons.

(223) A marina at **Mile 683.6** has a pier 300 feet long with reported depths of 10 feet alongside in 2006. Berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out station and wet storage are available.

(224) At **Mile 684.4**, State Route 520 highway fixed bridge crossing the waterway has a clearance of 65 feet. No crosscurrents are experienced during either flood or ebb; the currents flow in the direction of the channel. A marina on the east side of the waterway just above the bridge had reported depths of 11 feet in the approach and 10 feet alongside the piers in 2007. Berthage, electricity, gasoline, diesel fuel, water, ice, pump-out station, marine supplies, wet and dry storage and a 9-ton lift are available. From Jekyll Creek the waterway enters **Jekyll Sound** at **Mile 685.7** and continues across St. Andrew Sound.

(225) **St. Andrew Sound**, which has the most hazardous exposure along the waterway south of Port Royal Sound, is very rough during periods of strong north, northeast, or east winds. A protected route bypassing St. Andrew Sound leaves the waterway at **Mile 686.0.** This alternate route passes through **Little Satilla River**, **Umbrella Cut**, **Umbrella Creek**, **Dover Cut**, **Dover Creek**, **Satilla River**, **Floyd Creek**, and rejoins the waterway in Cumberland River at **Mile 695.8**. In 2004,the midchannel controlling depths were 6.0 feet in Umbrella Cut, 4.5 feet in Umbrella Creek, 6.5 feet in Dover Creek, and 6.5 feet in Floyd Creek. In 1981, a wreck was reported at the junction of Dover Creek and Satilla River in about 30°59'00"N., 81°29'24"W. Caution is advised.

(226) **Little Cumberland Island** and **Cumberland Island** extend along the east side of the waterway from **Mile 690.0** to **Mile 714.0.** The islands have been designated a National Seashore Park, although some parts are still privately owned. Persons wishing to visit the islands must make arrangements with the National Park Service at St. Marys.

(227) An anchorage, reportedly used by visitors to the National Seashore Park, in depths of about 25 feet, mud bottom, is off the abandoned settlement of **Dungeness,** on the west side of Cumberland Island about 0.8 mile northeastward of **Mile 710.8.** The anchorage is open to southwesterly winds, and the current is reported to attain a velocity of 2 knots.

(228) From St. Andrew Sound the waterway enters **Cumberland River,** passing by **Cumberland Wharf, Mile 694.6,** and **Cabin Bluff, Mile 700.2.** The Cumberland River becomes **Cumberland Dividings** and joins with **Cumberland Sound** at **Mile 704.0.**

(229) At **Mile 707.8,** the waterway passes east of the Naval submarine support base in Kings Bay.

(230) Mariners are cautioned that the color of aids to navigation change to green on the right while following the ICW until the waterway enters Amelia River at about **Mile 714.3,** thence the color of aids to navigation change to red on the right.

(231) A **regulated navigation area** has been established in Cumberland Sound in the vicinity of Kings Bay. (See **165.1 through 165.13 and 165.730**, chapter 2, for limits and regulations.)

(232) The waterway continues down Cumberland Sound past the St. Marys River and into **Amelia River** to **Fernandina Beach, Mile 717.0,** where hotel accommodations, fuel, supplies, and repair facilities are available. Fernandina Beach is described at length in chapter 8.

(233) At **Mile 719.8**, the waterway enters **Kingsley Creek**. Two bridges cross the waterway at **Mile 720.7**. The first, the railroad bridge, has a swing span with a clearance of 5 feet; an island is aligned with the center fenders of this bridge. The second, State Route A1A highway bridge, is a twin fixed bridge with a clearance of 65 feet. Overhead power cables on the south side of the bridge have a least clearance of 80 feet. The mean range of tide at the bridge is 6 feet. Flood and ebb currents are normal to the bridge openings and are relatively high; velocities up to 2.5 knots on the flood and 3 knots on the ebb may be expected, especially with favoring winds. Caution is advised. (For predictions, see the Tidal Current Tables.)

(234) At **Mile 722.8,** the waterway enters **South Amelia River** and for a distance of about 4.5 miles the channel is narrow and winds through shoals and marsh islets. Although the channel is well marked by daybeacons

and lights, it is the most difficult part of this section of the route. At low water, the extensive mudflats and oyster beds on each side of the channel are well defined. **Amelia City** is at **Mile 724.3.** The piers are privately owned, and there are no facilities except a restaurant. The southernmost pier, owned by the restaurant, is in poor condition, but boats may tie up to it at their own risk. The waterway enters **Nassau Sound** at **Mile 729.0.** The sound is described in chapter 8.

(235) At **Mile 729.5,** the Intracoastal Waterway leaves Nassau Sound through a cut about 0.9 mile long and then enters **Sawpit Creek.** The waterway continues along Sawpit Creek and Gunnison Cut to the junction of Sisters Creek with Fort George River at **Mile 735.0.**

(236) **Fort George River** is marked by daybeacons and trends southward from the waterway to Fort George Inlet, described in chapter 8.

(237) The **Kingsley Plantation,** a prominent historical building and State park, is on the south side of Fort George River about 0.7 mile southeastward of its junction with the Intracoastal Waterway. Good anchorage in 15 feet is reported available just southeastward of Daybeacon 5. The current is reported to be 3 knots.

(238) The waterway continues down **Sisters Creek.** (For current predictions in the creek see the Tidal Current Tables.)

(239) At **Mile 739.2,** near the junction of Sisters Creek and St. Johns River, State Route 105 highway bridge crossing the waterway has a bascule span with a clearance of 24 feet at the center. An overhead power cable about 50 feet west of the bridge has a clearance of 80 feet. Caution is advised at the bridge, because cross currents are encountered during both flood and ebb.

(240) The facilities of a drydock and shipbuilding company are on the east bank of the creek, south of the bridge, and on the St. Johns River just eastward of the creek mouth. The firm builds steel-hulled tugs and fishing vessels and does all types of underwater and topside work on commercial and Government vessels; work on pleasure craft, except for very large yachts, is not done here. There is a 4,000-ton marine railway which handles vessels up to 220 feet, several mobile cranes, complete shop facilities, and berths for vessels of up to about 585 feet. The marine railway is on the St. Johns River side of the yard, while the construction work is done on the Sisters Creek side.

(241) The **St. Johns River,** Mile 739.5, is the approach to the important city of **Jacksonville,** 16 miles west of the junction with the Intracoastal Waterway, where complete supply and repair facilities are available. It is described in chapter 9.

(242) The Intracoastal Waterway continues south across St. Johns River and into **Pablo Creek.** An overhead power cable with a clearance of 89 feet crosses the waterway at **Mile 741.8**. A fixed highway bridge with an authorized clearance of 65 feet crosses the waterway at **Mile 742.1**. At **Mile 744.7** the Atlantic Boulevard (State Route 10) highway bridge has a fixed span with a clearance of 65 feet over the waterway. There are strong tidal currents in the immediate vicinity of the bridge. On the flood the current in the channel flows southward and at right angles to the bridge at a velocity of 3.4 knots at strength. On the ebb the current flows northward and sets about 15° to the right of the axis of the channel at a velocity of 5.2 knots at strength. The currents at a distance of 100 yards either side of the bridge are much weaker with practically no turbulence and give no warning of the strong current at the bridge. Current predictions are given in the Tidal Current Tables. An overhead power cable 25 feet north of the bridge has a clearance of 85 feet.

(243) An overhead power cable at Mile 745.8 has a clearance of 90 feet.

(244) McCormick (U.S. Route 90) highway bridge across the waterway at **Mile 747.5** has a bascule span with a clearance of 37 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) In 2009, a fixed highway bridge with a design clearance of 65 feet was under construction close north of the bascule bridge; upon completion, it will replace the bascule bridge. An overhead power cable 35 feet north of the bridge has a clearance of 80 feet.

(245) A yacht basin is on the east side of the waterway just north of the bridge. Berths, electricity, gasoline, diesel fuel, water, ice, pump-out station, a launching ramp, marine supplies and wet and dry storage are available. Engine and electronic repairs can be made; a 20-ton lift and a marine railway for craft up to 40 feet are available.

(246) At **Mile 749.5**, a fixed highway bridge with a clearance of 65 feet crosses the creek.

(247) Numerous snags and old piling, many covered at high water, are on both sides of the waterway for a distance of about 5.7 miles from the vicinity of **Oak Landing, Mile 749.8,** to **Palm Valley Landing, Mile 755.5.** Particular care should be taken in this section to stay in the center of the channel.

(248) At **Mile 750.1**, the waterway leaves Pablo Creek and enters a long cut.

(249) The Palm Valley/State Route 210 highway bridge crossing the waterway at **Mile 758.8** has a fixed span with a clearance of 65 feet.

(250) The route continues through the long cut to **Tolomato River** at **Mile 760.9.**

## Chart 11485

(251) **Guana River** enters Tolomato River on the east side opposite **Mile 770.5.** A privately marked channel in Guana River leads up to a dam at **South Ponte Vedra Beach** (chart 11489). The reported centerline controlling depth was 4 feet in 1983, **Guana Tolomato Matanzas National Estuarine Research Reserve**, a Marine Protected Area (MPA), extends from Tolomato and Guana Rivers to Matanzas River.

(252) At **Mile 773.5,** a fish camp has a marine railway that an handle craft up to 60 feet for hull repairs. Emergency gasoline engine repairs can be made, and gasoline and water are available.

(253) At **Mile 775.6**, a channel marked by private daybeacons and a **250°** lighted range leads west to a well-protected marina. Berths, electricity, gasoline, diesel fuel, water, ice, pump-out station, marine supplies, and wet storage are available. A 50-ton lift is available for hull, engine, and electronic repairs; welding and canvas fabrication is also available.

**Note**

(254) In 1998, severe shoaling had occurred in the Intracoastal Waterway from **Mile 775** southward to **Mile 780**, including the area crossing St. Augustine Inlet. Mariners are advised to seek local knowledge before transiting this area.

(255) The **Vilano Beach** (State Route A1A) highway bridge crossing the Tolomato River at **Mile 775.8** has a fixed span with a clearance of 65 feet. Tidal currents run at angles to the bridge and caution is imperative. Flood currents up to 1 knot and ebb currents up to 1.5 knots may be expected during normal weather. A marina on the north side of the fixed highway bridge and on the east side of Tolomato River has berths, electricity, gasoline, diesel fuel, water, ice, and a pump-out station available. An overhead power cable 70 yards south of the bridge has a clearance of 100 feet.

(256) The waterway continues on beyond St. Augustine Inlet and enters **Matanzas River**; the river separates **Anastasia Island** from the mainland. At **Mile 777.9,** State Route A1A highway bridge, known as the **Bridge of Lions,** and which connects Anastasia Island with St. Augustine, has a bascule span with a clearance of 25 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) Caution is advised because the tidal currents, particularly ebb, run at right angles to the bridge. It is advisable to drift large tows through this opening at slack water. Normal flood currents of 1 knot and ebb currents of 1.5 knots may be expected.

**Note**

(257) Tidal predications for the area around the Bridge of Lions are unattainable due to the lack of a local Tidal Current Station. Because of this, NOAA cannot make accurate predictions. Several mishaps involving the bridge being hit by vessels which have lost maneuvering control during periods of ebb currents, have occurred. Caution is advised when transiting the area.

(258) **St. Augustine Inlet** and **St. Augustine** are described in chapter 10.

(259) In the broader sections of the river above St. Augustine, the channel is very narrow and contorted, extending between shoals visible at low water.

(260) **San Sebastian River** flows into Matanzas River at **Mile 780.0** and is described in chapter 10.

(261) A fixed highway bridge at **Mile 780.3** has a clearance of 65 feet.

(262) At **Crescent Beach** (State Route 206) highway bridge over Matanzas River has a bascule span with a clearance of 25 feet at the center. Gasoline may be obtained by shallow-draft boats at a fishing camp just south of the bridge on the east side of the waterway. Several fish camps are farther south of the bridge.

(263) About a mile northward of Matanzas Inlet, near **Mile 792.3,** the waterway leaves Matanzas River and enters a land cut.

**Caution**

(264) It is reported that navigation in the Intracoastal Waterway opposite the breakthrough at Matanzas Inlet at about **Mile 794.0** is hazardous during flood and ebb tides. Signs reading "DANGER TURBULENT WATER" have been placed on the north and south of the inlet to warn mariners of this condition. Also, in 1992, severe shoaling was reported in this area.

(265) Matanzas River continues eastward and southward about 1.2 miles to Matanzas Inlet. Route A1A highway bridge crossing the inlet has a 41-foot fixed span with a clearance of 10 feet. The inlet is described in chapter 10. Route A1A highway bridge crossing Matanzas River about 0.8 mile southward of the inlet has a 31-foot fixed span with a clearance of 12 feet; the one crossing the river 1 mile farther south has a 29-foot fixed span with a clearance of 12 feet. The overhead power cables at these bridges have a minimum clearance of 32 feet.

(266) About 2 miles southward of Matanzas Inlet near **Mile 796.0**, the Intracoastal Waterway re-enters Matanzas River. At **Mile 796.6** is the oceanarium at **Marineland** where many types of marine life are exhibited; an admission fee is charged. On the east side of the waterway a privately marked channel, with a reported controlling depth of 7 feet in 1993, leads to the Marineland marina and boat slip. Berths at the marina are just southward of the boat slip. Depths of 6½ feet are reported alongside. Gasoline, diesel fuel, and limited marine supplies are available.

(267) A small-craft facility is on the south side of a private canal that leads westward from the waterway at **Mile 802.8.**

(268) At **Mile 803.0**, a high level fixed highway bridge with a clearance of 65 feet crosses the waterway. State Route 100 highway bridge at **Flagler Beach, Mile 810.6,** is a fixed highway bridge with a clearance of 65 feet. Overhead power and television cables 70 feet north of the bridge have a clearance of 85 feet.

(269) The Highbridge Road bridge at **Mile 816.0** has a bascule span with a clearance of 15 feet at the center. An overhead power cable 25 feet north of the bridge has a clearance of 85 feet.

(270) The waterway enters **Halifax River at Mile 818.4** and continues to **Ormond Beach.** A yacht basin at **Mile 821.8** has a 35-ton mobile hoist that can handle craft up to 55 feet; hull and engine repairs can be made. A

machine shop and carpenter shop are on the premises. Berthage with electricity, gasoline, diesel fuel, water, ice, a launching ramp, and marine supplies are available. In 1983, depths of 5 feet are reported in the approaches and alongside the berths. The Ormond Beach Bridge over the waterway at **Mile 824.9** has a fixed span with a clearance of 65 feet.

(271) Twin fixed bridges cross the waterway at **Mile 829.1** with a clearance of 65 feet.

(272) **Daytona Beach, Mile 830.0**, is a large resort city with stores, motels, hotels, and restaurants. The city has excellent yacht facilities, and marine supplies can be obtained.

(273) Main Street Bridge at **Mile 829.7** has a bascule span with a clearance of 22 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) Broadway Bridge has a fixed span that crosses the waterway at **Mile 830.1** with a clearance of 65 feet. Memorial Bridge at **Mile 830.6** has a clearance of 21 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(274) Just south of the fourth bridge at **Mile 830.7,** a marked channel leads westward from the waterway to the City Dock on the north side of the Municipal Yacht Basin. In 2003, the channel had a midchannel controlling depth of 4.5 feet. There are several berths on the east and south sides of the basin with reported depths of 6½ feet alongside. Water, ice, and electricity are available; meals and lodging are nearby. At the Halifax River Yacht Club, which is on the west side of the basin, reciprocal courtesies are extended to visiting members of other yacht clubs. Berths with electricity, water, and ice are available. In 2000, a depth of 8 feet was reported alongside.

(275) At **Mile 831.0,** a privately dredged channel marked by private daybeacons leads west to a small-craft harbor. In 2005, the reported controlling depths were 8 feet in the entrance channel and in the basin.

### Weather, Daytona Beach and vicinity

(276) The nearness to the ocean results in a climate tempered by winds off the water. Summer temperatures, which reach 90°F (32.2°C) or more on an average of 55 days each year, are often cooled below 90°F (32.2°C) by an early afternoon sea breeze. The average high temperature for Daytona Beach is 80°F (26.7°C) and the average low temperature is 61°F (161.1°C). By a fraction of a degree, July is the warmest month with an average high of 90°F (32.2°C) and an average low of 72°F (22.2°C). January is the coolest month with an average high of 69°F (20.6°C) and an average low of 47°F (8.3°C). Temperatures of 100°F (37.8°C) have been recorded in each month, May through August. The extreme maximum temperature for Daytona Beach is 102°F (38.9°C) recorded in July 1981. Freezing temperatures are uncommon with an average of only two days each year recording an extreme minimum below 32°F (0°C) and only 11 days recording an extreme minimum below 45°F (7.2°C). The coolest temperature on record at Daytona Beach is 15°F (-9.4°C) recorded in January 1985.

(277) Frequent afternoon showers and thunderstorms (13-18 days per month) also help cool things off in addition to accounting for about 60 percent of the annual precipitation from June through mid-October. Average annual rainfall at Daytona Beach is 49 inches (1,244.6 mm). August is the wettest month averaging nearly 6.5 inches (165.1 mm) and December is the driest month averaging about 2.5 inches (63.5 mm). Snowfall is rare and an accumulation has never occurred however, trace amounts have been recorded in each month, December through February. Heavy fog is most likely during winter and early spring. These radiation fogs usually form at night and dissipate after sunrise. On rare occasions, a sea fog moves in and persists for 2 or 3 days.

(278) While tropical cyclones are a threat mainly from June through October, hurricane force winds can be expected once in 30 years on the average. At this latitude and location, hurricanes usually either pass well offshore or have weakened from an overland trip from the southwest or west. Of the 59 tropical cyclones that threatened Daytona Beach during the period 1842-1995, 47 occurred during the months August, September, and October. By a narrow margin, the greatest occurrence is in September. The predominate direction from which the storm arrives is from the South or Southwest. Since 1950, 22 storms have come within 50 nm (92.6 km) of Daytona Beach. Hurricane Donna is likely the most memorable storm to effect the Daytona Beach area in recent memory. On September 11, 1969, Donna crossed the central Keys moving to the northwest and abruptly turned northward crossing the southwest Florida coast near Naples. From there, Donna continued north-northeastward, up the spine of the peninsula, moving back out over open water north of Daytona Beach. The maximum wind at landfall was estimated near 135 miles per hour with gusts to 150 miles per hour and winds were still 90 miles per hour by the time the storm reached the Daytona Beach area.

(279) (See Appendix B for **Daytona Beach climatological table.**)

(280) The primary facilities for yachts, other than the Halifax River Yacht Club is at 0.3 mile south of Seabreeze Bridge at **Mile 829.4**, and is used primarily for docking, and fueling.

(281) The entrance channel to the other marina and boat works leaves the Intracoastal Waterway 0.5 mile south of the entrance to Halifax River Yacht Club at **Mile 831.2**, has a marked channel, which had a reported controlling depth of 7 feet in 1993. There are 350 open and covered berths which can accommodate vessels up to 90 feet in length. Depths of 7 feet are reported alongside, and gasoline, diesel fuel, water, ice, electricity, and marine supplies are available.

(282) State Route A1A bridge across the waterway at **Port Orange Mile 835.5,** is a fixed bridge with a clearance

of 65 feet. A boatyard and a marina are on the east side of the waterway, north of the bridge. The boatyard 0.3 mile north of the bridge and the marina adjacent to the bridge have berths with electricity, gasoline, diesel fuel, water, ice and marine supplies. Mobile hoists to 30 tons that can handle craft to 50 feet are available at the boatyard; hull repairs can be made. Machine and carpenter shops are on the premises. Reported depths of 8 feet and 3 feet are alongside the boatyard and marina, respectively.

(283) The waterway continues down the Halifax River to **Mile 840.0** where it enters **Ponce de Leon Cut.** Strong cross currents may be felt at times in this cut, due to the currents from **Spruce Creek** veering from one side to the other.

(284) **Inlet Harbor,** 0.5 mile southeast of the waterway at **Mile 839.6,** is a small fishing port. In 2002, the reported controlling depth from the waterway to the harbor was 6 feet; thence in 1983, 5 feet or more to the community of Ponce Inlet. The channel is along the north shore and is not marked. The wharf at Inlet Harbor has depths of about 8 feet alongside. Berthage with electricity, gasoline, diesel fuel, water, ice, marine supplies and wet and dry storage are available. Engine repairs can be made.

(285) At the community of **Ponce Inlet,** about 1 mile below Inlet Harbor inside the north side of Ponce de Leon Inlet, there are several small-craft facilities where berthage with electricity, gasoline, diesel fuel, water, ice, launching ramps, and a 70-ton lift are available. Hull, engine and electronic repairs can be made.

(286) Ponce de Leon Inlet is described in chapter 10.

(287) The waterway leaves Ponce de Leon Cut and enters **Indian River North** at **Mile 843.5,** about a mile southward of Ponce de Leon Inlet, and follows the river southward for about 15.5 miles through the marshes to Mosquito Lagoon. In some places the river is narrow and crooked, requiring careful steering and close attention to the channel daybeacons.

(288) At **Mile 845.0**, there is a bascule span (SR44) with a clearance of 24 feet at the center. **(See 117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(289) At **New Smyrna Beach, Mile 846.1**, are several small-craft facilities and the Municipal Yacht Basin. (See the small-craft facilities tabulation on chart 11485 for services and supplies available.)

(290) The Harris Saxon Bridge at **Mile 846.5** is a fixed bridge with a clearance of 65 feet. During flood (southerly flow) current from Sheephead Cut makes a cross current in a westerly direction north of the bridge. Boats with tows proceeding southward during a flood current are advised to allow for the cross current. An overhead power cable close northward of the bridge has a clearance of 85 feet.

(291) The Intracoastal Waterway through Mosquito Lagoon and Indian River is through open water making the route rough at times, particularly during strong winds.

(292) At **Mile 868.5**, the waterway enters **Haulover Canal,** a cut through the 0.4 mile-wide strip of land separating Mosquito Lagoon from the Indian River. Jetties, which have brush-covered sand deposits piled along their outer sides, extend almost 0.4 mile from shore at each end of the cut, giving the canal a total length of about 1.2 miles.

### Tides and currents

(293) Wind tides are quite pronounced at times producing strong currents in the canal. Southerly winds will build up the water level on the Indian River side of the canal and at the same time lower the water level on the Mosquito Lagoon side. Northerly winds will cause the reverse effect. At such times the normal water level varies as much as 2 feet, with currents through the channel up to 1.5 knots setting in the direction of the wind.

(294) At **Mile 869.2,** a highway bridge crosses near the center of Haulover Canal; the bridge has a bascule span with a clearance of 27 feet at the center. Overhead power cables northeastward of the bridge have clearances of 85 feet. If a vessel must stop before passing through the bridge and a strong current is running, care should be taken to prevent setting against the rocky sides of the canal.

### Manatees

(295) Regulated speed zones for the protection of manatees are in Haulover Canal and in Bairs Cove (28°44.0'N., 80°45.4'W.) on the southeast side of the canal. (See Manatees, chapter 3.)

(296) At **Mile 869.8,** the waterway enters **Indian River,** which extends southward for about 119 miles from Haulover Canal to St. Lucie Inlet. In general, it is a broad lagoon quite shallow in places. The spoil banks alongside the channel have built up in recent years and now appear as small islets on which are mangrove and other trees.

(297) The river is nontidal except in the vicinity of Fort Pierce and for a short distance above the St. Lucie Inlet where the depth may vary as much as 2 feet under the influence of strong northerly and southerly winds.

(298) **Merritt Island National Wildlife Refuge** is on **Merritt Island** on the east side of the northern part of Indian River.

(299) At **Mile 876.6,** a causeway and railroad bridge across the waterway has a bascule span with a clearance of 7 feet. The span is automatically operated; it is normally in the open position, but will close on the approach of trains. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(300) A well-protected yacht basin is at **Titusville, Mile 878.4;** the basin is connected to the waterway by a marked dredged channel had a reported approach depth of 8 feet in 2009. Marinas in the basin provide berths with electricity, gasoline, diesel fuel, water, ice, a launching ramp, pump-out station, and limited marine supplies. Hull, engine, and electronic repairs are

available; the marina at the south end of the basin has a 50-ton lift.

(301) The principal industries at Titusville are fishing, tourism, and the growing of citrus fruits; the town is on a principal public highway approach to the John F. Kennedy Space Center at Cape Canaveral. State Route 402 highway bridge (locally known as Titusville swing bridge) across the waterway here has a swing span with a clearance of 9 feet. (See **117.1 through 117.59 and 117.261(k)**, chapter 2, for drawbridge regulations.) In 2010, a fixed highway bridge was under construction with a design clearance of 68 feet; upon completion, it will replace the swing bridge.

### Manatees

(302) A regulated speed zone for the protection of manatees is in Banana Creek at the north end of Merritt Island east of **Mile 880.5**. (See Manatees, chapter 3.)

(303) At **Mile 882.9** on the west side of Indian River, a privately marked channel leads to a marina. In 2004, the reported approach and alongside depth was 6 feet. Berths, gasoline, diesel fuel, electricity, water, ice, pump-out station, launching ramp, and wet storage are available.

(304) NASA Parkway (State Route 405-locally known as Addison Point bridge) crossing the waterway at **Mile 885.0** has a bascule span with a clearance of 27 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) An overhead power cable at **Mile 888.6** has a clearance of 85 feet over the main channel and 45 feet elsewhere between **Jones Point** and **Pine Island.**

### Manatees

(305) Regulated speed zones for the protection of manatees are in the vicinity of powerplants at **Delespine, Mile 887.4,** and **Frontenac, Mile 889.1.** (See Manatees, chapter 3.)

(306) An overhead power cable at **Mile 893.6** has a clearance of 85 feet over the main channel and 45 feet elsewhere, between **City Point** and Merritt Island.

## Charts 11485, 11478, 11484

(307) **Canaveral Barge Canal**, **Mile 893.8,** connects the Intracoastal Waterway with Port Canaveral described in chapter 10. A Federal project provides for a 12-foot channel from the Intracoastal Waterway through land cuts in Merritt Island, thence across Banana River, thence through a barge lock, and thence to the deep-water turning basin at Port Canaveral. (See Notice to Mariners and latest editions of the charts for controlling depths.) The lock, about 1.5 miles westward of the turning basin, has a width of 90 feet and a length of 600 feet, and is in operation between the hours of 0600 and 2130 daily. (See **207.160**, chapter 2, for canal and lock regulations.) Vessels are required to tie up fore and aft to the south wall inside the lock, allowing sufficient slack in the lines to provide for a rise or fall of water of about 4 feet. Vessels are restricted from using the lock while a petroleum barge is in passage. Smoking is prohibited within the lock. The channel is well marked by aids to navigation. Limiting clearances are 21 feet at the center for the State Route 401 drawbridges and 65 feet for the overhead power cables. (See **117.1 through 117.59 and 117.273**, chapter 2, for drawbridge regulations.)

(308) A fish camp and several marinas are on the south side of Canaveral Barge Canal, both eastward and westward of State Route A1A highway bascule bridge. Berthage with electricity, water, ice, a launching ramp, pump-out station, and wet and dry storage are available.

(309) Several marinas are in the dredged basin on the south side of the barge canal opposite **West Basin**. Berths with gasoline, diesel fuel, electricity, launching ramps, pump-out stations, water, and ice are available; lifts to 75 tons are available for hull, engine, and electronic repairs.

(310) State Route 528 causeway and bridges crossing Indian River at **Mile 894.0** have twin fixed spans with clearances of 65 feet over the main channel, and twin 30-foot fixed spans over a relief channel at the west end of the causeway with clearances of 12 feet.

(311) At **Cocoa, Mile 897.4,** a causeway and twin fixed bridges with clearances of 65 feet cross the waterway. An overhead power cable about 0.1 mile southward of the bridges has a clearance of 88 feet over the main channel.

(312) Northward of and parallel with the causeway on the east side of Indian River, a privately marked and dredged channel leads to a yacht basin with no facilities. In 2003, the reported approach depth was 4.5 feet to the basin.

(313) On the west side of Indian River just north of the causeway, a privately marked channel leads to marina which had a reported approach depth of 6 feet in 2005. Berths with electricity, water, ice and pump-out station are available.

(314) At **Mile 908.4**, a marina with water, wet and dry storage, and a 12-ton lift is available; hull and engine repairs can be made.

(315) At **Mile 909.0**, the twin fixed spans of the Pineda Expressway have a clearance of 65 feet over the main channel of Indian River.

## Charts 11485, 11472, 11484, 11476

(316) At **Mile 910.7** on the west side of Indian River, a privately marked channel leads to a small yacht basin. Berths with electricity, gasoline, diesel fuel, water, ice, a pump-out station, and dry storage are available. Engine, hull and electronic repairs can be made. In 2006, the reported approach and alongside depth was 7 feet.

(317) At **Mile 914.4,** State Route 518 causeway fixed highway bridge crosses Indian River and has an authorized clearance of 65 feet.

(318) **Banana River** has its southern entrance at **Mile 914.2** opposite Melbourne. The river is used by small

boats as a harbor of refuge during hurricanes and storms. In 1976-1978, the controlling depth was 3 feet from the entrance of the river for about 16 miles to the junction with the Canaveral Barge Canal. Mariners are cautioned to carefully follow the marked channel, because there is severe shoaling along the edges in some places.

(319) A marina on the south side of the entrance to Banana River has gasoline, diesel fuel, ice, water, electricity, marine supplies, and a pump-out station; hull, engine, and electronic repairs can be made. In 2006, a reported approach depth of 6 feet was available; local knowledge is advised.

(320) A highway bridge across the Banana River about 0.5 mile above the entrance has a swing span with a clearance of 7 feet. (See **117.1 through 117.59 and 117.263**, chapter 2, for drawbridge regulations.) A marina on the east side of the river immediately southward of the bridge has berths with a reported approach depth of 12 feet with 8 feet alongside in 2006. Gasoline, diesel fuel, water, ice, a pump-out station, electricity, and a 40-ton mobile hoist are available; hull, engine, and electronic repairs can be made.

(321) Twin fixed highway bridges with clearances of 43 feet over the channel cross Banana River about 4.3 miles above the mouth.

(322) An Air Force **prohibited area** is at the base on the east bank of the Banana River about 5.8 miles above the mouth. (See **334.560**, chapter 2, for limits and regulations.)

(323) **Newfound Harbor** is at the southeastern end of Merritt Island, 10 miles above the entrance to Banana River. The harbor is shoal and about 4 miles long in a north-south direction. Several shoals and obstructions have been reported in Newfound Harbor. About 3.7 miles above the entrance, State Route 520 highway fixed bridge has a clearance of 36 feet.

(324) Across the entrance to **Sykes Creek** at the north end of Newfound Harbor there is a highway bridge that has a 30-foot fixed span with a clearance of 15 feet. An overhead power cable close northwestward of the bridge has a clearance of 23 feet. About 0.1 mile above the bridge, the center and southern sections of a former bridge have been removed; the northern portion remains as a fishing pier. Twin 30-foot fixed span highway bridges with clearances of 15 feet cross the creek about 2.2 miles above the mouth. A 37-foot fixed span bridge with a clearance of 16 feet crosses the creek about 2.8 miles above the mouth.

(325) Two boatyards are on the west side of Banana River about 12 miles above the southern entrance, and 2.1 miles north of **Buck Point,** the eastern entrance point of Newfound Harbor. Berthage with electricity, water, marine supplies, a 30-ton mobile hoist, and wet and dry storage are available. Hull and engine repairs can be made. In 2002, a depth of 4½ feet was reported in the approach, and 6 feet alongside the berths.

(326) Cocoa Beach causeway (State Route 520), crossing the Banana River, 3.5 miles north of Buck Point, has a fixed span with a clearance of 36 feet.

(327) About 16 miles above the entrance and 6.4 miles north of Buck Point, the Banana River is crossed by U.S. Route A1A causeway and bridges. The twin fixed spans over the main river channel have a clearance of 36 feet; the 30-foot twin spans over the relief channel at the west end of the causeway have clearances of 14 feet.

(328) About 0.2 mile northward of U.S. Route A1A causeway-bridges, the Canaveral Barge Canal crosses the river channel and leads east to Port Canaveral. **Saturn Barge Channel** extends northward from Canaveral Barge Canal to the head of Banana River and to two side channels leading eastward and westward to basins at missile test installations; a side channel, extending eastward from the Saturn Barge Channel, 5 miles northward of the Canaveral Barge Canal, leads to a basin on the cape. The basin is within a **restricted area.** (See **334.550**, chapter 2, for limits and regulations.) The channels are marked by lights, daybeacons, and buoys, and had a controlling depth of 12 feet in 1977-1978. In 1983, shoaling to an unknown extent was reported on the south side of the west side channel in about 28°35'33"N., 80°36'58"W.; the shoal is marked by a daybeacon. An overhead power cable crosses Saturn Barge Channel about 0.6 mile northward of Canaveral Barge Canal with a clearance of 65 feet.

### Manatees

(329) A regulated speed zone for the protection of manatees is in the channel and basin at the small-craft harbor on the west side of Banana River at **Audubon,** 1.5 miles north of Canaveral Barge Canal. The area on the east side of the river immediately south of the NASA Parkway is closed to motorized craft from April 1 through November 14 annually. (See Manatees, chapter 3.)

(330) A **Security Zone** has been established to include certain land and water areas at Port Canaveral-Cape Canaveral and adjacent areas at John F. Kennedy Space Center, including portions of Indian River and Banana River. (See **165.1 through 165.7, 165.30, 165.33, and 165.701**, chapter 2, for limits and regulations.)

(331) Banana River above the Canaveral Barge Canal and the adjacent land areas are within a Security Zone. Limits and regulations are given under the description of Cape Canaveral in chapter 10.

(332) A **prohibited area** in upper Banana River, about 3 miles above the Canaveral Barge Canal, is adjacent to a missile-test annex. (See **334.540**, chapter 2, for limits and regulations.)

(333) The NASA Parkway (State Route 405) causeway and bridge crosses Banana River 6.5 miles above the Canaveral Barge Canal. The bridge has a bascule span over the navigation channel with a clearance of 24 feet at the center. (See **117.1 through 117.59 and 117.263**, chapter 2, for drawbridge regulations.) A NASA space center **restricted area** is just north of the NASA Parkway

causeway. (See **334.570**, chapter 2, for limits and regulations.) An overhead power cable with a clearance of 85 feet crosses the river about 3.0 miles north of the NASA Parkway causeway bridge.

## Chart 11472

(334) The Intracoastal Waterway continues through Indian River southward for about 74 miles to St. Lucie Inlet.

(335) The highway causeway (State Route 518) crossing the river at **Melbourne** at **Mile 914.4** has a fixed span across the Intracoastal Waterway with a clearance of 65 feet. About 200 yards south of the bridge, an overhead power cable crosses the waterway with a clearance of 90 feet at the main channel. An overhead cable on the south side of the relief bridge at the east end of the causeway has a clearance of 35 feet.

(336) About 0.5 mile south of the causeway at **Mile 914.9,** a dredged, marked channel leads to a yacht basin inside the mouth of **Eau Gallie River.** In 2006, the reported controlling depth in the entrance channel was 6.2 feet; thence in 2001, 10 feet was in the basin except for lesser depths to 3.5 feet along the edges. General depths in the area where the river widens between the yacht basin and U.S. Highway 1 bridge crossing, are 3 feet. The basin and the area close E afford good shelter from storms. A city ordinance restricts speed to no wake in Eau Gallie River. Several marinas and a boatyard are in the basin. (See the small-craft facilities tabulation on chart 11472 for services and supplies available.)

(337) About 0.5 mile above the mouth of Eau Gallie River, U.S. Route 1 highway bridge has a fixed span with a clearance of 12 feet. About 0.1 mile above the highway bridge, the Florida East Coast railroad bridge has a 44-foot fixed span with a clearance of 12 feet.

(338) At **Mile 916.7,** a privately marked channel leads from the waterway to a marina on the west side of Indian River. Gasoline is available. In 2007, the channel to the marina had a reported approach depth of 8 feet and 6 feet alongside.

(339) At **Mile 918.2,** State Route 516 causeway at Melbourne has dual high-level fixed bridges with clearances of 65 feet across the Intracoastal Waterway.

(340) At **Mile 918.7,** about 0.5 mile south of the bridges, a marked channel leads westward from Indian River to a turning basin inside the mouth of **Crane Creek**. In 2010, the controlling depth was 3 feet in the S half and 5.5 feet in the N half of the entrance with 6.7 feet in the turning basin. A marina on the N side of the creek has berths with electricity, gasoline, diesel fuel, water, ice, marine supplies, sewage pump-out, wet storage and harbormaster services. The **harbormaster** may be reached by telephone 321-725-9054.

(341) About 0.2 mile above the mouth of Crane Creek, U.S. Route 1 highway bridge has a 36-foot fixed span and a clearance of 15 feet. About 175 yards westward of the highway bridge, the Florida East Coast railroad bridge has a 40-foot fixed span and a clearance of 14 feet. Overhead power cables close westward and 500 yards westward of the railroad bridge have clearances of 25 and 40 feet, respectively.

(342) At **Mile 921.2,** an overhead power cable with a clearance of 95 feet, crosses the waterway at the main channel.

(343) **Turkey Creek** is on the west side of Indian River at **Mile 921.3.** About 0.5 mile above the entrance, U.S. Route 1 highway bridge has a 34-foot fixed span with a clearance of 15 feet. About 300 yards above the highway bridge, the Florida East Coast railroad bridge has a fixed span with a clearance of 10 feet. Overhead power cables at the railroad bridge have a minimum clearance of 21 feet. A shoal, bare at low water, is in the middle of the entrance to Turkey Creek. In 2006, a depth of 4 feet was reported in the natural channel marked by daybeacons to the eastward of the shoal area.

### Manatees

(344) A regulated speed zone for the protection of manatees is in Turkey Creek. (See Manatees, chapter 3.)

(345) Two marinas are on the southern part of Turkey Creek between the two bridges. Berthage with electricity, gasoline, diesel fuel, pump-out station, water, ice, some marine supplies, launching ramp, and a 10-ton lift are available for hull, engine, and electronic repairs. In 2007, 4 feet was reported in the approach.

(346) Two marinas are on the west side of the Indian River at **Mile 934.0**. Berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out station and wet and dry storage are available. Hull, engine, and electronic repairs can be made; lift to 40-tons. In 2007, 5 feet was reported in the approach channel and alongside.

(347) At **Mile 935.0,** a marina on the east side of the river has berthage, water, ice and a launching ramp. In 2004, an approach depth of 3.5 feet and an alongside depth of 4 feet were reported.

(348) **Saint Sebastian River Mile 935.4,** is used by local fishing boats going to **Roseland,** 1.1 miles above the mouth. U.S. Route 1 highway bridge across the entrance to the creek has a fixed span with a clearance of 18 feet. About 1 mile above the highway bridge, the Florida East Coast railroad bridge has a 46-foot fixed span with a clearance of 12 feet. Two overhead power cables at the railroad bridge, one on the east side and the other on the west side, have clearances of 17 feet and 60 feet, respectively. About 300 yards above the railroad bridge an overhead power cable has a clearance of 23 feet.

(349) A marina is on the north side of Saint Sebastian River, just westward of U.S. Route 1 highway bridge. Berths, gasoline, water, ice, and a launching ramp are available.

(350) **Pelican Island National Wildlife Refuge** is on the east side of the waterway between **Mile 936.3** and **Mile 942.8.**

(351) **Sebastian** is a fishing town at **Mile 938.3.** There are marinas here which have gasoline, diesel fuel, electricity, water, ice, a pump-out station, launching ramp, marine supplies, and wet storage. In 2003, the reported approach depth was 4 feet and the reported alongside depth was 3 feet. A **special anchorage** is off the town of Sebastian. (See **110.1, and 110.73a**, chapter 2, for limits and regulations.)

(352) A fixed highway bridge across the waterway at **Mile 943.3** near **Wabasso** has clearance of 65 feet. The bridge and causeway between the mainland and the island westward of the Intracoastal Waterway has a 46-foot center span with a clearance of 9 feet. A channel, reportedly marked by private aids, leads to a marina on the west side of the waterway just below the highway bridge. An overhead power cable crossing Indian River on the north side of the Wabasso causeway, with a clearance of 40 feet from the mainland to the bridge, is submerged at the Intracoastal Waterway, thence a clearance of 50 feet to the eastern shore of the river.

(353) The waterway is crooked and subject to strong currents in narrow places from about 1 mile north of the Wabasso Bridge to about 4 miles south of it. Caution must be observed at the bends where vision is limited.

(354) At **Mile 946.3,** a privately marked channel, with a reported controlling depth of 4.4 feet in 2007, leads off to the northwestward to a waterfront development at **Hobart Landing,** about a mile south of Wabasso.

(355) At **Mile 948.7**, a privately maintained channel leads from the waterway to a marina on the west side of Indian River. Gasoline, diesel fuel, electricity, water, limited marine supplies, and a pump-out station are available. In 2004, a reported depth of 5 feet was available in the approach and alongside the marina.

(356) **Vero Beach, Mile 951.9,** is an active ocean resort and yachting center. A high level fixed highway bridge over the waterway here has a reported clearance of 65 feet. A **special anchorage** is about 0.8 mile northeast of Vero Beach just inside a channel leading northeastward then northerly from the waterway to the mouth of **Bethel Creek.** (See **110.1 and 110.73(b),** chapter 2, for limits and regulations.) There are several small-craft facilities tabulation of chart 11472 for services and supplies available.) Just north of the bridge, a marked channel leads eastward from the waterway for about 0.3 mile to a turning basin. In 2007, the reported controlling depth was 6.0 feet.

(357) From Vero Beach to the St. Lucie Inlet the Indian River is broad and quite shallow, but the Intracoastal Waterway route is well marked and easy to follow. Spoil banks parallel the channel at a distance of several hundred yards and are mostly covered with mangrove and a few Australian pines.

(358) A fixed highway bridge with a clearance of 65 feet crosses the waterway at **Mile 953.2.**

(359) Overhead power cables at **Mile 953.2** and **Mile 954.9** have clearances of 85 feet.

**Manatees**

(360) A regulated speed zone for the protection of manatees is in the vicinity of the powerplant at Vero Beach at **Mile 953.2.** (See Manatees, chapter 3.)

(361) At **Mile 964.2**, a privately marked channel, with a reported controlling of 6 feet in 2003, leads to a marina in a basin on the west shore of Indian River. Berths, electricity, pump-out station and wet and dry storage are available. A 70-ton lift is available for hull, engine and electronic repairs.

(362) State Route A1A highway bridge north of Fort Pierce at **Mile 964.8** has a bascule span with a clearance of 26 feet at the center. A marina south of the bridge on the west side of the waterway has berths with electricity, gasoline, diesel fuel, water, ice, pump-out station, wet and dry storage and a 99-ton lift available. Hull, engine, and electronic repairs can be made.

(363) **Fort Pierce, Mile 965.6,** has supply and repair facilities. The town and Fort Pierce Inlet are described in chapter 10.

(364) At **Mile 965.8,** State Route A1A fixed highway bridge crossing the waterway at Fort Pierce has a clearance of 65 feet. There is a strong crosscurrent at this bridge. Vessels proceeding north or south should approach the bridge with caution. At all times maintain sufficient headway to avoid being carried against the fender system. An overhead power cable south of the bridge has a clearance of 85 feet.

**Manatees**

(365) A regulated speed zone for the protection of manatees is in the vicinity of the power plant at Fort Pierce at **Mile 966.1.** (See Manatees, chapter 3.)

(366) At **Mile 966.5,** a channel leads to the municipal marina. Berthing, electricity, gasoline, diesel fuel, water, ice, pump-out station, and some marine supplies are available. In 2004-2005, the reported controlling depth in the approach channel was 6.0 feet. The harbormaster may be contacted via VHF-FM channels 9 and 16 or by calling 772-464-1245.

(367) Overhead power cables at **Mile 974.2** have clearances of 90 feet across the channel and 60 feet elsewhere.

(368) At **Mile 979.2**, a privately marked channel leads eastward from the waterway to a marina on the Southeast side of **Nettles Island**. The marina has berths, electricity, gasoline, diesel fuel, water, ice and marine supplies. Engine repairs can be made.

(369) **Jensen Beach, Mile 981.4,** is a winter resort on the west bank of the Indian River. State Route 707A highway bridge (locally known as Jensen Road bridge) crossing the waterway here has a bascule span with a clearance of 24 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) In 2004, a fixed bridge with a design clearance of 66 feet was under construction and will replace the bascule bridge.

(370) At **Mile 982.8,** a privately dredged channel marked by private daybeacons leads westward from the waterway to a marina in a small protected basin. In 2002, the reported approach and alongside depth was 6 feet. Wet and dry storage are available. A 5-ton lift can haul out craft for hull and engine repairs.

(371) State Route A1A highway bridge (locally known as Indian River bridge) across the waterway at **Mile 984.9** has a fixed span with a clearance of 65 feet. A marina on the east side of the Indian River, 200 yards north of the bridge, has berths, electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out station and wet and dry storage available. At **Mile 985.0**, a channel marked by private daybeacons leads eastward from the waterway to a marina on the east side of Indian River near the foot of the bridge. Electricity, gasoline, diesel fuel, water, ice, a pump-out station, launching ramp and marine supplies are available; hull, engine and electronic repairs can be made. In 2001, the reported approach depth was 7 feet.

(372) The junction of the Intracoastal Waterway and Okeechobee Waterway is at **St. Lucie Inlet, Mile 987.8.** St. Lucie Inlet and River, Port Salerno, Port Sewall, and Stuart are described in chapter 10.

### Caution

(373) Extreme caution is advised when crossing St. Lucie River. Cross currents will give a vessel an east or west set, depending on the direction and velocity of the current in the river. Vessels should be able to stay in the channel by using the ranges on each side of the intersection. To make a turn from the Intracoastal Waterway into St. Lucie River or vice versa, allowance must be made for the cross currents to prevent swinging too wide or too short.

## Chart 11428

### Okeechobee Waterway

(374) From its junction with the Intracoastal Waterway in St. Lucie Inlet, Okeechobee Waterway follows St. Lucie River westward to South Fork, through South Fork and St. Lucie Canal, and enters Okeechobee Lake at Port Mayaca. It crosses the southern part of the lake and exits at Moore Haven into Caloosahatchee Canal and thence into Caloosahatchee River, San Carlos Bay, and the Gulf of Mexico. From San Carlos Bay, the Gulf section of the Intracoastal Waterway follows an inside route along the west coast of Florida to Anclote River, thence outside to Carrabelle Ship Channel in St. George Sound, and thence inside again through the remainder of Florida, Alabama, Mississippi, Louisiana, and Texas to Brownsville. The Gulf section is described in **United States Coast Pilot 5, Atlantic Coast–Gulf of Mexico, Puerto Rico, and Virgin Islands.**

(375) **Mileage** in the Okeechobee Waterway is measured westward from Mile 0.0 at the Intracoastal Waterway junction in St. Lucie Inlet. The total length of the Okeechobee Waterway is about 155 miles from the Atlantic Waterway to the Gulf of Mexico. Mileage signs (statute miles) have been erected at the five locks.

(376) **Distances along the Okeechobee Waterway are in statute miles to facilitate reference to the small-craft charts; all other distances are in nautical miles. Mileage conversion tables are in Appendix B.**

### Channel

(377) The Federal project for the Okeechobee Waterway provides for a channel with a depth of 8 feet from the Intracoastal Waterway near Stuart via Okeechobee Lake Route 1 to Fort Myers; thence 10 feet to Punta Rassa; thence 12 feet to the Gulf of Mexico; a channel 6 feet deep in Taylor Creek from the town of Okeechobee to the lake, and a depth of 6 feet for Route 2 along the south shore of Lake Okeechobee from Port Mayaca westward to Clewiston. Controlling depths are published in local Notice to Mariners.

### Sounding datums

(378) Depths charted in St. Lucie River from the Intracoastal Waterway to St. Lucie Lock are referred to mean low water. From St. Lucie Lock through St. Lucie Canal and Lake Okeechobee to Moore Haven Lock, depths are referred to a low water elevation which is 12.56 feet above mean sea level. From Moore Haven Lock through Caloosahatchee Canal to Ortona Lock, depths are referred to a low water elevation which is 10.06 feet above mean sea level. In the Caloosahatchee River, the chart datum is mean lower low water. Actual available depths are shown on gages displayed at each lock.

(379) **Hurricane gates** are in the levee at Clewiston Industrial Canal, Miami Drainage Canal, Hillsboro Canal-North New River Drainage Canal, and West Palm Beach Drainage Canal. The hurricane gate at Clewiston is equipped with a lock that allows passage of small craft into Clewiston Industrial Canal. Pumping stations are at the hurricane gates at Miami Drainage Canal, Hillsboro Canal-North New River Drainage Canal, and West Palm Beach Drainage Canal. The gates are opened or closed only for pumping, and are not opened for boats. Depths of 10 feet may be taken over the sills. All gates have a width of 50 feet. These canals are not navigable and have filled with hyacinths and other obstructions.

### Tides and currents

(380) The diurnal range of tide is 1.2 feet at Fort Myers and 2.4 feet at Punta Rassa. At the eastern end of the waterway, tidal influence is perceptible to St. Lucie Lock (Mile 15.1) and at the western end, at low-water stage, is perceptible at Ortona Lock (Mile 93.5). Cross **currents** at the junction of St. Lucie River with the Intracoastal Waterway make the short turn at that point hazardous.

### Weather, Okeechobee Waterway and vicinity

(381) This route across the peninsula encounters a variety of climatic conditions. In general, temperatures over the inland portions are slightly cooler in winter, particularly the lows, and warmer in summer. The west coast also exhibits some of these continental tendencies, due mainly to the prevalence of easterly winds. For example, temperatures climb to 90°F (32.2°C) or above, on 106 days annually at Fort Myers, compared to 131 days at La Belle and 92 days near Stuart. Freezing temperatures are infrequent on the coast and occur on an average of 1 to 2 days inland. Summertime temperatures are tempered by the sea breeze along the east coast and by frequent afternoon showers and thunderstorms everywhere. Thunderstorms develop on about 80 to 100 days annually, and are most likely from June through September. They are generated by heating, fronts and tropical cyclones. Thunderstorms can bring heavy rain, strong gusty winds and hail. In severe cases tornadoes or waterspouts may develop. While dangerous, these are usually smaller and less damaging than the tornadoes of the mid-West.

### Bridges

(382) The minimum clearance under bridges across the Okeechobee Waterway is 49 feet at the lift bridge at **Mile 38.0**.

(383) General drawbridge regulations and opening signals for bridges over the Okeechobee Waterway and Taylor Creek are given in **117.1 through 117.49**, chapter 2. **Special drawbridge regulations** for certain bridges that supplement the general regulations are referenced with the area description of the waterway and the creek.

(384) The minimum clearance under overhead cables across the Okeechobee Waterway is 55 feet.

### Government mooring facilities

(385) There is a Government yacht basin with 4 slips available for overnight mooring of medium size boats at the Moore Haven Lock; similar facilities are available in the Government yacht basin below Ortona Lock. Government-owned tieup dolphins are located on the waterway immediately above and below each of the locks and immediately west of the entrance to Clewiston Industrial Canal.

### Locks

(386) Three of the five locks in the waterway have a length of 250 feet, width of 50 feet, and depth over the sill of 10 feet. The Port Mayaca Lock, **Mile 40.0,** has a length of 400 feet, width of 56 feet, and a depth of 16 feet. The W. P. Franklin Lock at Olga, **Mile 121.4,** has a length of 400 feet, width of 56 feet, and depth over the sills of 14 feet.

(387) General regulations governing bridges and locks and the handling of tows are given in **207.160,** chapter 2. The five navigation locks on the Okeechobee Waterway are operated from 0600 to 2130 daily; operating personnel are not on duty at other hours.

(388) Maintenance of the Okeechobee Waterway and operation of the locks are in charge of the Corps of Engineers area office at Clewiston. Before any attempt is made to pass through any portion of this route, the latest information regarding available depths, operations of the locks, and other existing conditions should be obtained from the office of the Corps of Engineers at Clewiston or at the Federal Building, 400 West Bay Street, Jacksonville. The telephone number of the Clewiston area office is 863-983-8101; fax, 863-983-8579.

(389) Public address systems are installed at all the locks as an aid to navigation and a safety feature. Craft approaching any of the locks should approach for passage only upon receiving instructions from the lock tender through the loudspeaker system or by standard light signal. The locks monitor VHF-FM channel 16.

### Caution

(390) The St. Lucie, Port Mayaca, Moore Haven, Ortona, and W.P. Franklin Locks are used, when conditions require, for discharging water from Lake Okeechobee. All vessels approaching these locks during periods of discharge should exercise caution. The depth over the upper sill of St. Lucie Lock is reduced from 13.5 feet to 8 feet when water is being discharged from Lake Okeechobee.

(391) **St. Lucie Inlet** and **St. Lucie River** to Stuart, **Mile 7.5**, are discussed in chapter 10. **South Fork** of St. Lucie River begins at **Mile 7.7** and trends southward into **St. Lucie Canal**.

(392) A **special anchorage** is east of the waterway at **Mile 7.6**. (See **110.1 and 110.73(c)**, chapter 2, for limits and regulations.)

(393) **Palm City, Mile 9.5,** is a small town on the west bank of South Fork. The fixed highway bridge over the waterway here has a clearance of 54 feet. The overhead power cable just north of the bridge a clearance of 55 feet. During periods of high water in Lake Okeechobee, shoaling may occur in the vicinity of the bridge.

### Small-craft facilities

(394) A marina is on the east bank of the river, just south of the fixed highway bridge. Berths, electricity, pumpout, gasoline, diesel fuel, water, ice, marine supplies, wet and dry storage, and a 60-ton marine lift are available. Hull, engine, and electronic repairs can be made. An alongside depth of 5.2 feet was reported in 2007.

(395) At **Mile 10.1,** Okeechobee Waterway enters St. Lucie Canal from South Fork, which then continues southeastward. South Fork above the junction is deep and winding, affording good protection for small boats during hurricane weather. About 2 miles up this fork is a fixed highway bridge with a clearance of 4 feet. Current was observed to be flowing up the river at this bridge.

**Heights**

(396) Overhead clearances on the St. Lucie Canal from St. Lucie Lock to Port Mayaca Lock are referred to a St. Lucie Canal stage of 14.5 feet.

(397) St. Lucie Canal is crossed at **Mile 14.0** by the I-95 twin fixed highway bridges with clearances of 56 feet, at **Mile 14.2** by an overhead power cable with an authorized clearance of 95 feet, and at **Mile 14.5** by the Thomas B. Manual (Florida Turnpike) Bridge, which has a fixed span with a clearance of 55 feet. At **Mile 14.4**, on the south side of the waterway, a boatyard is available for gasoline, diesel fuel, hull, engine and electronic repairs.

(398) The **St. Lucie Lock, Mile 15.1,** has a width of 50 feet, length of 250 feet, and a depth of 12 feet over the sill. High water in Lake Okeechobee may cause the lock to be closed to navigation for parts of the day. Caution should be used when approaching the lock when it is being used to discharge water from Lake Okeechobee. Limited tieup facilities are available at the lock.

(399) Overhead power and telephone cables crossing St. Lucie Canal at **Mile 17.1** have clearances of 56 feet. State Route 76A fixed highway bridge crossing the canal at **Mile 17.01** has a clearance of 56 feet.

(400) An overhead power cable at **Mile 20.2** has a clearance of 82 feet.

(401) At **Mile 23.7,** overhead power and telephone cables crossing the waterway have a least clearance of 58 feet.

(402) At **Mile 25.4,** overhead power cables with a least clearance of 63 feet cross the waterway; another overhead power cable with a clearance of 76 feet crosses at **Mile 26.9.**

(403) Near **Indian Town,** State Route 710 highway bridge at **Mile 28.1,** has a fixed span with a clearance of 55 feet. The hand-operated swing span of the Seaboard System Railroad (SCL) bridge at **Mile 28.5** has a channel width of 47 feet and a clearance of 7 feet. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.) An overhead telephone cable at the bridge has a clearance of 59 feet, and overhead power and telephone cables 0.4 mile west of the bridge have a clearance of 75 feet.

(404) At **Mile 29.5**, there is a marina on the north side of the canal where berths with electricity, gasoline, diesel fuel, water, ice, pump-out station, launching ramp, wet and dry storage, marine supplies, and a 50-ton marine lift are available; hull and electronic repairs can be made. In 2006, the reported controlling depth in the entrance and in the basin was 8 feet.

(405) Several overhead power cables between **Mile 33.0** and Port Mayaca Lock have a least clearance of 56 feet.

(406) **Port Mayaca, Mile 38.0,** has no piers, but one wall of the lock is still present and can be used to tie up. Some supplies are available in the community. The South Central Florida Express Railroad bridge across the waterway here has a lift span with clearances of 7 feet down and 49 feet up. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.)

(407) U.S. Routes 98–441 highway bridge at **Mile 38.8** has a fixed span with a clearance of 55 feet.

(408) **Port Mayaca Lock,** about 300 yards west-southwest of the U.S. Routes 98-441 highway bridge, has a length of 400 feet, width of 56 feet, and a depth of 16 feet over the sill.

(409) The waterway enters **Lake Okeechobee** at **Mile 38.9.** The lake is an approximately circular fresh-water lake in southern Florida, about 26 miles from the Atlantic coast, 50 miles from the Gulf coast, and 90 miles from the south end of the mainland. It varies in width from 22 to 30 miles and is shoal along its west and southwest sides with depths of 10 to 14 feet in the center. The shoal areas are generally filled with a thick growth of watergrass, which makes it necessary to equip boats with weedless propellers if operating in the lake for any length of time.

(410) **Taylor Creek** empties into Lake Okeechobee at its northernmost extremity. A lock at the mouth of the creek is 60 feet long and 50 feet wide, and has a depth of 5.5 feet over the sill. (See **207.170d**, chapter 2, for regulations.) About 3.5 miles above the mouth of the creek is the town of **Okeechobee,** which has rail and highway connections. A dredged channel leads from the lake to the highway bridge at Okeechobee. In 1983-2004, the reported controlling depth was 5 feet almost to the highway bridge. The approach channel from the lake to the mouth of Taylor Creek is marked by a light and daybeacons; the remainder of the channel to Okeechobee is unmarked.

(411) U.S. Route 441 highway bridge about 0.2 mile above the mouth of Taylor Creek has a 40-foot bascule span with a clearance of 9 feet. (See **117.1 through 117.59 and 117.335**, chapter 2, for drawbridge regulations.) Overhead power cables north and south of the bridge have a minimum clearance of 40 feet. State Route 70 highway bridge crossing the creek of Okeechobee has a 40-foot swing span with a clearance of 3 feet.

(412) A marina 1.4 miles southwest of Taylor Creek has gasoline, dry storage, a launching ramp and engine repairs available.

(413) **Kissimmee River** flows into the north side of Lake Okeechobee about 5.3 miles southwest of Taylor Creek. State Route 78 highway bridge about 0.5 mile above the river entrance has a removable span with a channel width of 36 feet when open and a clearance of 20 feet. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) The overhead power cable at the bridge has a clearance of 71 feet. In 1986, the centerline controlling depth was 4 feet in the entrance channel, then 8 feet for another 5 miles.

(414) **North Lake Shoal** extends 4 miles off the northwest shore of the lake. **Observation Shoal** is an extensive sand shoal extending as much as 7 miles off the southwest shore of the lake. **Rocky Reef** extends across the south end of the bay between **Observation Island** and **Bacom Point;** depths of 2 to 7 feet are over it in places. The channel of Route 1 through the reef is marked by lights

and daybeacons. **Halifax Bank** is a sand shoal toward the south end of **South Bay.**

(415) Shelter may be found in Taylor Creek at the north end of the lake, in **Pelican Bay** at the southeast corner of the lake, and in the canals. Where depths are sufficient in the watergrass off the west and southwest sides of the lake, anchorage in moderate weather can be made, as the holding bottom is good and protection is afforded by the watergrass.

(416) **Route 1** across Lake Okeechobee from Port Mayaca follows a southwesterly course to Rocky Reef, thence a southerly course in the channel through the reef which is marked by lights and daybeacons, and then turns westward and thence southwestward and joins Route 2 at Clewiston.

(417) **Clewiston**, at **Mile 65.0** via Route 1 and **Mile 75.7** via Route 2, is an agricultural community on the southwest side of the lake. It is on a branch of the Seaboard System Railroad. There are several hotels, motels, restaurants, and a shopping district in the city. The area offices and general headquarters of the U.S. Army Corps of Engineers are on the east side of the canal at the east side of town. Berths, electricity, gasoline, diesel fuel, water, ice, a launching ramp, dry storage, pump-out station, marine supplies and provisions can be obtained along both sides of the canal. Engine repairs can be made. Dock space is available along the bulkhead of the Clewiston Industrial Canal south of the levee. In 2008, 3 feet was reported alongside. An overhead power cable that has a clearance of 37 feet crosses the canal about 400 yards south of the hurricane gate.

(418) Routes 1 and 2 combine into one route at Clewiston.

(419) **Route 2** leaves St. Lucie Canal at **Mile 38.9** and follows the southern perimeter of the lake. It is marked by daybeacons and is the route most used. It is recommended during periods of rough water and high winds in Lake Okeechobee. Levees are along the southern bank of this route.

(420) **Canal Point** is at **Mile 47.4** on Route 2. **West Palm Beach Drainage Canal** joins the lake here; in 2003, its was reported there was no boat access to the canal. At the lock in the canal, an overhead power cable has a clearance of 68 feet.

(421) **Pahokee, Mile 50.6,** is a town on the southeast side of the lake with a protected boat basin which had a reported alongside depth of 9 feet in 2008. Berths with electricity, gasoline, diesel fuel, pump-out station, water, ice, a launching ramp, and wet storage are available.

(422) The only bridge crossing Route 2 is at **Mile 60.7.** State Route 717 highway bridge, connecting the mainland at **Belle Glade** with **Torry Island** and **Kreamer Island,** has a swing span with a clearance of 11 feet. The channel is through the west draw. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.) An overhead power cable at the bridge has a clearance of 75 feet. Gasoline, water, ice, electricity, diesel fuel by truck, and launching ramps are available at boat landings on both sides of the bridge. South of the bridge, on Torry Island, there is a wharf maintained by the city with depths of 4 feet alongside; there are three surfaced launching ramps and a public picnic area.

(423) About 0.3 mile below the bridge at **Mile 61.0** the **Hillsboro Drainage Canal** and **North New River Drainage** Canal join the lake.

(424) The **Miami Drainage Canal** joins the lake at **Lake Harbor, Mile 67.2.**

(425) Route 2 continues northwestward to Clewiston where it joins Route 1 and combines into one route westward. Mileage westward of Clewiston is based on use of Route 1.

(426) **Moore Haven Lock, Mile 78.0,** has a width of 50 feet, a length of 250 feet, and a least depth of 10 feet over the sills. Two standby areas have been established for vessels waiting to pass through. The first area is about 275 yards northwest of the lock at the junction of the canals, and the second area is 150 yards southwest of it. During periods of discharge through the lock, the currents and turbulence are extremely hazardous to all craft. Under no circumstances shall any craft approach nearer to the lock than the standby areas until discharge has been stopped and the water pool stabilized.

(427) A public address system at the Moore Haven Lock is an aid to navigation and safety feature. Craft coming to the lock should approach the passage only upon receiving instructions from the locktender through the loudspeaker system, and enter the lock chamber only after signal from him.

(428) Freshwater is available at the lock. A boat basin with gasoline, diesel fuel, electricity, water, ice, and a launching ramp is just west of the lock. In 2004, the reported depth alongside was 10 feet.

(429) The waterway between Moore Haven Lock and Ortona Lock passes through **Caloosahatchee Canal**.

(430) The railroad bridge, at **Mile 78.3,** has a hand-operated swing span with a clearance of 5 feet; the channel is through the east draw. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.) The span required about 15 minutes for opening and westbound vessels should signal for opening the bridge while still in Moore Haven Lock. An overhead power cable about 150 yards south of the bridge has a clearance of 75 feet. At **Mile 78.4** U.S. Route 27 twin highway bridges have fixed spans with a clearance of 55 feet.

(431) There is a small-boat basin on the west side of the canal between the railroad and highway bridges. Gasoline, diesel fuel by truck, water, ice, electricity, launching ramp, wet covered storage for 35 boats 20 feet long and some marine supplies are available. A forklift that can haul out craft to 26 feet is available for hull and engine repairs. A depth of 4 feet can be carried from the waterway to the basin. An overhead cable with a clearance of 18 feet crosses the entrance to the basin. Provisions can be obtained in the town of **Moore Haven** at **Mile 78.5,** on the west bank of Caloosahatchee Canal about 0.5 mile south of the lock. There are hotels,

motels, and restaurants; some supplies can be obtained. Bus service is available. The town dock is on the west side of the canal just south of the highway bridge; water and electricity are available on the dock, and a small fee is charged for dockage. In 2004, a depth of 6 feet was reported alongside the dock.

(432) At **Mile 82.1,** the canal passes through shallow, freshwater **Lake Hicpochee,** about 5 miles long and 2.5 miles wide, soft mud bottom. Most of the surface is covered with hyacinth and saw grass. Spoil banks on both sides of the canal are overgrown to a height of about 12 feet and have only a few open spots where the lake can be seen.

(433) At **Citrus Center, Mile 88.8,** a marina on the south side of the waterway has berths with water, ice and a launching ramp.

(434) At **Mile 90.0,** an overhead power cable with a clearance of 75 feet crosses the canal.

(435) **Ortona Lock, Mile 93.5,** has a width of 50 feet, a length of 250 feet, and a depth of 11 feet over the sills. During periods of heavy discharge through the spillway with the lock gates closed, the currents sweep toward the spillway. Navigators approaching the lock should exercise extreme caution and maintain maximum possible control at all times. A ramp and a 180-foot wharf are about 500 yards west of the lock on the north bank.

(436) The waterway enters **Caloosahatchee River** through a land cut west of Ortona Lock. Normal current in the river and canal is about 1.5 knots; however, velocities are increased considerably during freshets.

(437) A list of hurricane havens, "Safe Harbors in Caloosahatchee River During Hurricanes," is available from Lee County Division of Marine Sciences, 3410 Palm Beach Blvd., Fort Myers, FL 33916; telephone: 813-338-3375.

(438) Overhead power and telephone cables about 0.2 mile westward of Ortona Lock have a clearance of 76 feet.

(439) At **Mile 100.8**, there is a marina on the south side of the canal with one berth, gasoline, diesel fuel, water and ice available.

(440) **LaBelle, Mile 102.9,** has a pier and turning basin. In 1983, a depth of 4½ feet was reported alongside the pier. State Route 29 highway bridge crossing here, has a bascule span with a clearance of 28 feet at the center. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.) The overhead power and television cables at the bridge have a least clearance of 60 feet.

(441) At **Denaud, Mile 108.2,** a highway bridge has a swing span with a clearance of 9 feet. An overhead power cable west of the bridge has a clearance of 79 feet. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.)

(442) **Alva,** on the north bank at **Mile 116.0,** has a small pier where gasoline, water, and some marine supplies can be obtained. State Route 873 highway bridge crossing the waterway here, has a bascule span with a clearance of 23 feet. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.) The overhead power cable at the bridge has a clearance of 77 feet.

(443) **W. P. Franklin Lock, Mile 121.4,** has a length of 400 feet, width of 56 feet, and a depth of 14 feet over the sill. A government operated recreation area with a launching ramp, water, and picnic tables is on the north side of the waterway adjacent to the lock.

(444) At **Mile 124.0,** just below **Olga,** there is a small marina where berths, gasoline, water, ice, some marine supplies, a 10-ton forklift, and hull and engine repairs are available. In 2004, a depth of 6 feet was reported alongside.

(445) At **Trout Creek** enters the waterway. **Owl Creek** branches from Trout Creek about 0.7 mile above the entrance. There are two entrances from the waterway into Trout Creek. The controlling depth, in 1963, was 5 feet in the western entrance and 7 feet in the eastern entrance. At Owl Creek there is a small-craft facility where wet storage and a forklift to 60 tons is available; hull and engine repairs can be made. A 150-foot marine railway is at the facility.

(446) A highway bridge crossing the river at **Mile 126.2** has a bascule span with a clearance of 27 feet at the center. (See **117.1 through 117.59 and 117.317**, chapter 2, for drawbridge regulations.) A marina close west of the bridge provides water, ice, gasoline, a pump-out station, berths with electricity, wet and dry storage, a launching ramp and a 20-ton forklift.

(447) At **Mile 128.0,** four overhead power cables have a minimum clearance of 80 feet. The twin fixed highway bridges at **Mile 128.9** have a least clearance of 55 feet.

(448) **Orange River** enters the waterway at **Mile 128.9.** In 2004, the reported approach depth was 6 feet to a marina about 0.6 mile above the mouth. Gasoline, diesel fuel, a pump-out station, berths with electricity, dry storage, a launching ramp and some marine supplies are available.

(449) Orange River is a hurricane refuge for small yachts. The river is crossed by State Route 80 highway bridge 0.8 mile above the mouth. It has a fixed span with a clearance of 13 feet. Adjacent to the bridge are overhead power cables with a minimum clearance of 38 feet. From the bridge to about 1.5 miles above the mouth, other overhead cables have a minimum clearance of 20 feet.

### Manatees

(450) Regulated speed zones for the protection of manatees are in the Caloosahatchee River from San Carlos Bay to the Edison Memorial Bridge (U.S. 41) and in Orange River and at its confluence with Caloosahatchee River about 5 miles above Edison Memorial Bridge. (See Manatees, chapter 3.)

(451) The Caloosahatchee River is crossed at **Mile 129.9** by a Seaboard System Railroad (SCL) bridge which has a bascule span with a clearance of 5 feet. In the open

position, the draw overhangs the channel above a height of 55 feet.

(452) **Edison Memorial Bridge** (U.S. Business Route 41), has two fixed spans which cross the Caloosahatchee River at **Fort Myers, Mile 134.5**, with a clearance of 56 feet.

(453) **Caloosahatchee Bridge** (U.S. Route 41), which crosses the Caloosahatchee River about 0.5 mile SW of the Edison Memorial Bridge has a fixed span with a clearance of 55 feet at the main channel.

(454) There are several small-craft facilities on the north and south side of the river in the vicinity of the two bridges (see the small-craft facilities tabulation on chart 11427 for services and supplies available).

## Chart 11472

(455) South of St. Lucie Inlet, the Intracoastal Waterway enters **Great Pocket** at **Mile 988.3,** proceeds to a canal at **Mile 990.1,** and continues through **Peck Lake** and **South Jupiter Narrows** to **Hobe Sound.**

### Manatees

(456) A regulated speed zone for the protection of manatees is in those waters of the Indian River other than the Intracoastal Waterway from St. Lucie Inlet to Jupiter Inlet. (See Manatees, chapter 3.)

(457) State Route 708 highway bridge (locally known as Hobe Sound bridge) at **Mile 995.9** has a bascule span with a clearance of 21 feet.

(458) **Hobe Sound National Wildlife Refuge** comprises the shore areas west of the waterway from **Mile 996.8** to **Mile 999.7.**

(459) The waterway continues in Hobe Sound to **Conch Bar, Mile 1001.3,** and thence through **Jupiter Sound** to Jupiter Inlet. At **Mile 1004.1,** near the southern end of Jupiter Sound, State Route 707 highway bridge crossing the waterway has a bascule span with a clearance of 25 feet. There are numerous small-craft facilities on both sides of the waterway in Jupiter Sound. (See the small-craft facilities tabulation on chart 11472 for services and supplies available.)

(460) Jupiter Inlet is discussed in chapter 10.

(461) The waterway continues into **Loxahatchee River** at **Mile 1004.5.** U.S. Route 1 highway bridge (locally known as Federal Highway bridge) across the waterway at **Mile 1004.8** has a bascule span with a clearance of 26 feet at the center. The bridgetender monitors VHF-FM channel 16; call sign WHW-793. Piers of a former bridge extend from shore on both sides of the channel just west of the bridge. About 0.3 mile westward of the bridge, the waterway makes a sharp turn just eastward of two other bridges, crosses Loxahatchee River, and enters Lake Worth Creek.

(462) Care must be taken not to confuse the route of the waterway with the passage through the two bridges just westward of the sharp turn across the Loxahatchee River at **Mile 1005.1.** Alternate State Route A1A highway bridge crossing the river has a 47-foot fixed span with a clearance of 25 feet. The Florida East Coast railroad bridge has a 40-foot bascule span with a clearance of 4 feet. (See **117.299**, chapter 2, for drawbridge regulations.) The river shoals beyond these bridges. A fixed highway bridge with a 34-foot removal span and a clearance of 11 feet crosses the north fork of the river about 2 miles above the railroad bridge. An overhead power cable north of the bridge has a clearance of 38 feet.

(463) A marina with excellent facilities is immediately east of the U.S. Route 1 bridge on the south side of the river at **Jupiter.** Berths with gasoline, diesel fuel, electricity, pump-out station, ice, marine supplies, and some engine repairs are available. In 2009, 6 feet was reported alongside. A smaller marina about 0.5 mile to the east had a reported approach and alongside depth of 5 feet in 2005; hull and engine repairs available.

(464) State Route 706 highway bridge (locally known as Indiantown Road bridge) at **Mile 1006.2** has a bascule span with a clearance of 35 feet at the center. The bridgetender monitors VHF-FM channel 16; call sign WHW-789. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(465) At **Mile 1007.1,** an overhead power cable has a clearance of 83 feet across the waterway. The Donald Ross Road bridge crossing the waterway at **Mile 1009.3** has a bascule span with a clearance of 35 feet. (See **117.1 through 117.59 and 117.261,** chapter 2, for drawbridge regulations.)

(466) State Route 74 (PGA Boulevard) highway bridge at **Mile 1012.6** has a bascule span with a clearance of 24 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) There are several marinas close north and south of the bridge. (See small-craft facilities tabulation on chart 11472 for services and supplies available.)

(467) At **Mile 1013.7**, the waterway is crossed by U.S. Route 1 highway bridge (locally known as Parker Bridge). It has a twin bascule span having a clearance of 25 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) The overhead power cable on the east side of the bridge has a clearance of 85 feet.

(468) Just southeastward of the bridge is a yacht basin. In 2006, the reported approach depth to the basin was 10 feet and 8 feet alongside. Gasoline, diesel fuel, electricity, water, ice, pump-out station and wet storage are available.

(469) The Intracoastal Waterway enters **Lake Worth** at **Mile 1014.1** and traverses the lake from one end to the other. The lake is a long, narrow, and shallow body of water separated from the ocean by an island varying in width from 0.1 to 0.5 mile. Considerable dredging has been done in Lake Worth for private channels and for real estate development. Local knowledge is necessary to carry the best water outside the limits of the marked channels.

(470) There are many excellent and complete marinas and repair yards for yachts along the shores of Lake Worth.

(471) **Little Lake Worth,** at the north end of Lake Worth, has a basin which in 1969, has depths of 12 to 14 feet. State Route A1A highway bridge across the entrance has a 27-foot fixed span with a clearance of 8 feet. A privately marked and dredged channel leads northward to Little Lake Worth from the Intracoastal Waterway at **Mile 1014.2.** In 1975-2000, the reported controlling depth was 7 feet. In 1987, shoaling to an unknown depth was reported just north of Daybeacon 9 and Daybeacon 10.

(472) State Route A1A fixed highway bridge (Jerry Thomas Memorial Bridge), crossing the waterway at **Mile 1017.2** and connecting **Riviera Beach** and **Singer Island,** has a clearance of 65 feet.

(473) There are a number of marinas, fuel piers, and repair facilities on both sides of Lake Worth between the bridge and the Port of Palm Beach. (See the small-craft facilities tabulation on chart 11472 for services and supplies available.)

(474) **Lake Worth Inlet, Mile 1018.4,** and the ship channel leading to the basin at the **Port of Palm Beach,** are described in chapter 10.

(475) Anchorage for yachts drawing up to 14 feet is available in the buoyed channel on the east side of Lake Worth leading southward from Port of Palm Beach main ship channel; the best area is immediately south of the ship channel.

### Manatees

(476) A regulated speed zone for the protection of manatees is in the vicinity of the powerplant discharge at Riviera Beach at **Mile 1018.5.** (See Manatees, chapter 3.)

(477) On the west side of the lake at **Mile 1019.8**, there is a marina with berths, electricity, diesel fuel, gasoline, ice, water, marine supplies, pump-out station, and wet and dry storage are available. Hull, engine, and electronic repairs can be made; lift to 99 tons and marine railway to 99 feet. In 2004, the reported approach depth was 12 feet with an alongside depth of 10 feet. Stores, motels and the Palm Beach International Airport are nearby.

(478) **West Palm Beach**, **Mile 1021.9**, on the west shore of Lake Worth, is a resort city which is also of considerable commercial importance. The city has complete supplies and services for yachts.

(479) The long pier of a marina is at **Mile 1021.6** in West Palm Beach, about 0.1 mile north of the highway bridge. Palm Beach Yacht Club is at the marina. In 2004, the reported approach depth was 9 feet with 8 feet alongside; berths with electricity, water, and ice are available.

(480) The yacht club pier is also near the Good Samaritan Hospital; medical aid to boaters is available at the hospital.

(481) **Flagler Memorial Bridge** (State Route A1A), **Mile 1021.8** has a bascule span with a clearance of 17 feet at the center. The bridgetender monitors VHF-FM channel 16, call sign WHW-785. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(482) About 0.1 mile south of the bridge, a privately maintained and marked channel leads westward to a marina. Gasoline, diesel fuel, electricity, water, ice, marine supplies and wet storage are available; restaurants, motels, hotels are close by.

(483) **Royal Palm (Royal Park)** bridge (State Route 704), **Mile 1022.6**, has a bascule span with a clearance of 21 feet. The bridgetender monitors VHF-FM channel 16, call sign WHW-681. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) Mariners are advised that waterway restrictions, authorized by the Marine Safety Office, Miami, are being enforced during the construction. Announcement of these restrictions are broadcast on VHF-FM channel 9.

## Chart 11467

(484) From West Palm Beach, the waterway continues southward to the south end of Lake Worth at **Mile 1034.3,** thence through a cut to Lake Wyman at **Mile 1045.7.**

(485) Southern Boulevard Bridge (State Route 80), **Mile 1024.7**, has a bascule span with clearance of 14 feet at the center. The bridgetender monitors VHF-FM channel 16, call sign WHW-777. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(486) **West Palm Beach Canal** enters the waterway at **Mile 1026.8**. A fixed highway bridge with a clearance of 12 feet is about 0.3 mile above the mouth. In 1983, the reported controlling depth in the canal was 7 feet.

(487) At **Lake Worth, Mile 1028.8,** State Route 802 highway bridge (locally known as Lake Worth Avenue bridge) crossing the waterway has a bascule span with a clearance of 38 feet at the center and 35 feet elsewhere. The bridgetender monitors VHF-FM channel 16 and works channel 13.

(488) A repair yard in the yacht basin on the west side of the lake at **Mile 1030.5** has berths with electricity, gasoline, water, a pump-out station, ice, marine suplies and dry storage. Hull, engine and electronic repairs can be made. In 2007, an approach depth of 7 feet was reported.

(489) At **Lantana, Mile 1031.0,** Lantana Avenue bridge crossing the waterway has a bascule span with a clearance of 13 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM 16 and works channel 13. There are small-craft facilities at **Miles 1032.6** and **1033.1.** Berths with electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out station, wet and dry storage are available. A lift to 85 tons is available for hull and engine repairs.

(490) At **Boynton Inlet, Mile 1033.7,** easterly winds cause currents that have great velocity and must be reckoned with when navigating the Intracoastal Waterway. The inlet is discussed in chapter 10.

(491) The waterway enters a cut at **Mile 1034.3.** East Ocean Avenue/State Route 804 highway bridge crossing the waterway at**Boynton Beach, Mile 1035.0,** has a bascule span with a clearance of 21 feet. The bridgetender monitors VHF-FM channel 16 and works channel 13; call sign WHW-773.

(492) Just north of the bridge on the western shore of the lake there are two small-craft facilities where berths with electricity, gasoline, diesel fuel, a pump-out facility, water and ice are available. In 2007, the reported approach detph was 10 feet with 8 feet alongside.

(493) At **Mile 1035.8,** Woolbright Road highway bridge with a bascule span and clearance of 25 feet crosses the waterway. The bridgetender monitors VHF-FM channel 16 and works channel 13.

(494) The Eighth Street highway bridge over the waterway at **Mile 1038.7** has a bascule span with a clearance of 9 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channel 16 and works channel 13.

(495) Just south of the bridge on the west side of the waterway there is a boatyard that makes hull, engine, and electronic repairs. The yard has berthage with electricity, gasoline, diesel fuel, water, ice, a pump-out station and dry storage.

(496) At **Delray Beach, Mile 1039.6,** the Atlantic Avenue (State Route 806) highway bridge has a bascule span with a clearance of 12 feet at the center. The bridgetender monitors VHF-FM channel 16 and works channel 13; call sign WHW-769. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) A marina on the west side of the waterway, 300 yards south of the highway bridge, at **Mile 1039.7** has berths, electricity, water, ice and pumpout available. A marina on the west side of the waterway about 1 mile south of the bridge, at **Mile 1040.6** has berths, electricity, gasoline, diesel fuel, water, ice, pump-out station and wet storage.

(497) Linton Boulevard (12th Street) bascule bridge with a clearance of 30 feet at the center crosses the waterway at **Mile 1041.0.**

(498) Spanish River Road bascule bridge with a clearance of 21 feet (25 feet at the center) crosses the waterway at **Mile 1044.9**. The bridgetender monitors VHF-FM channels 13 and 16.

(499) At **Mile 1045.7,** the waterway enters **Lake Wyman,** crosses the lake through a dredged channel, marked by lights and daybeacons, and then continues southward to Lake Boca Raton and Boca Raton Inlet.

(500) State Route 798 (Palmetto Park Road) highway bridge at **Boca Raton Mile 1047.5,** has a bascule span with a clearance of 19 feet at the center. Just south of the west side, is a surfaced launching ramp. The waterway enters **Lake Boca Raton** at **Mile 1047.7**. **Boca Raton Inlet** leads from the lake to the Atlantic Ocean. The inlet is described in chapter 10 (note the dangers).

(501) The waterway leaves Lake Boca Raton at **Mile 1048.1** and enters a long land cut. Crossing the north end of the land cut at **Mile 1048.2,** Camino Real highway bridge has a bascule span with a clearance of 9 feet at the center. (See **117.1 through 117.59 and 117.261 (aa-1)**, chapter 2, for drawbridge regulations.) Care should be exercised at this bridge as strong currents may be encountered; the sides of the canal are rocky.

(502) **Hillsboro Drainage Canal** enters the Intracoastal Waterway from the west at **Mile 1049.9** near **Deerfield Beach**. The confluence of the canal and the waterway on the north side of the bridge creates a dangerous condition in the channel. During periods of maximum discharge through the canal, hazardous currents develop in the Intracoastal Waterway channel about 100 yards north of Deerfield Beach Bridge.

(503) Vessels proceeding southward should not approach the bridge until it is fully opened for passage, and should at all times maintain sufficient headway to avoid being carried toward the east fender system by the flow of water from Hillsboro Drainage Canal that generates considerable cross current, especially during periods of flood.

(504) About 0.8 mile up Hillsboro Drainage Canal, U.S. Highway 1 bridge has a 40-foot fixed span with a clearance of 14 feet. Just above the bridge is a marina with berths, electricity, gasoline, diesel fuel, water, ice and dry storage available. A 50-ton lift is available for hull, engine, and electronic repairs.

(505) Just below the canal, at **Mile 1050.0,** the Intracoastal Waterway is crossed at Deerfield Beach by State Route 810 highway bridge that has a bascule span with a clearance of 21 feet at the center. The bridgetender monitors VHF-FM channel 16 and works on channel 13. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(506) Just south of the bridge on the west side of the waterway is a marina with berthage for 40 boats with 6 feet reported alongside. In 2002, the reported depth was 6 feet from the waterway into the basin. Electricity, gasoline, diesel fuel, water, ice, and wet storage are available.

(507) **Hillsboro Inlet** at **Mile 1053.9,** is described in chapter 10. Between Hillsboro Inlet and **Pompano Beach**, including **Lake Placid**, there are several marinas and repair facilities. (See the small-craft facilities tabulation on chart 11467 for services and supplies available.)

(508) At **Mile 1055.0,** Northeast 14th Street bridge has a double-leaf bascule span with a clearance of 15 feet. The bridgetender monitors VHF-FM channel 16 and works on channel 13. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(509) At **Pompano Beach, Mile 1056.0,** there is the Atlantic Boulevard/State Route 814 highway bridge with a bascule span with a clearance of 15 feet at the center. The bridgetender monitors VHF-FM channel 16 and

works on channel 13. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(510) **Lake Santa Barbara,** on the west side of the waterway at **Mile 1056.8,** has several marinas and boatyards. Berths with gasoline, diesel fuel, water, ice and pump-out are available. A marine railway can handle crafts up to 60 feet and a 25-ton lift is available for hull, engine, and electronic repairs.

(511) At **Mile 1059.0,** Commercial Boulevard bridge over the waterway near **Lauderdale-by-the-Sea** has a bascule span with a clearance of 15 feet. The bridgetender monitors VHF-FM channel 16 and works on channel 13. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(512) At **Mile 1060.5,** the Oakland Park Beach Boulevard highway bridge over the waterway near **Oakland Park** has a bascule span with a clearance of 22 feet at the center. The bridgetender monitors VHF-FM channel 16 and works on channel 13. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(513) At **Mile 1062.6,** the two Sunrise Boulevard (State Route 838) highway bridges, at Fort Lauderdale, have bascule spans with a minimum clearance of 25 feet at the center. The bridgetender monitors VHF-FM channel 16 and works on channel 13. (See **117.1 through 117.59 and 117.261,** chapter 2, for drawbridge regulations.)

(514) **Middle River** enters the waterway from westward about 0.6 mile south of the Sunrise Boulevard bascule bridges; the reported controlling depths, in 1975, were 6 feet to the Sunrise Boulevard highway bridge 0.9 mile above the mouth, thence 5 feet to the U.S. Route 1 bridge 2.2 miles above the mouth. The Sunrise Boulevard highway bridge about 0.9 mile above the mouth, reportedly has a 29-foot fixed span with a clearance of 5 feet. About 1 mile north of the bridge is an overhead power cable with a clearance of 38 feet. U.S. Route 1 highway bridge has a 29-foot fixed span with a clearance of 8 feet.

(515) An overhead power cable with a clearance of 46 feet crosses the river just eastward of U.S. Route 1 highway bridge.

(516) Middle River divides into North Fork and South Fork just westward of U.S. Route 1 highway bridge. North Fork is crossed by a 27-foot fixed span with a clearance of 4½ feet about 2.2 miles above the mouth of Middle River.

(517) **Speed** in Middle River is limited to no wake from a point 1 mile above the Sunrise Boulevard Highway Bridge.

(518) **Fort Lauderdale, Mile 1065.0,** a large and colorful city known as the "Venice of America," is served by the Florida East Coast Railway and the Seaboard System Railroad. Navigable waters include the myriad of manmade canals in addition to the natural waterways. The canals between the manmade islands are used by the riparian owners and their guests.

(519) All facilities for yachts are available at Fort Lauderdale, and several thousand yachts base here in the winter. (See the small-craft facilities tabulation on chart 11467 for services and supplies available.) There are many bathing and recreation facilities, hotels, restaurants, and shopping centers in the city. A monument marks the original site of Fort Lauderdale, built in 1838 during the Seminole War.

(520) At **Mile 1064.0,** Las Olas Boulevard highway bridge has a bascule span with a reported clearance of 24 feet at the center. The bridgetender monitors VHF-FM channel 13 (156.65 MHz).

(521) The large Bahia Mar yacht basin, consisting of two divided basins and an outer wharf, is on the east side of the Intracoastal Waterway about 0.4 mile southward of Las Olas Boulevard Bridge. Depths of 7 to 14 feet are alongside the face of the wharf, and decreasing depths from 11 to 5½ feet at the finger piers in the basins. The office of the yacht basin's dockmaster is in the administration building on the outer wharf. The dockmaster makes all berthing arrangements. Gasoline, diesel fuel, water, electricity, showers, ice, restaurant, motel, shopping center, and marine supplies are available. All kinds of supplies are available in the city.

(522) **New River,** the main navigation channel in this area, is entered through two connecting channels at **Mile 1065.0** and **Mile 1065.3.** In 2002, the controlling depths were 8.0 feet in the north and south connecting channels, thence 6.3 feet (8.0 feet at midchannel) for about 0.5 mile above the junction of the connecting channels, thence in 1977, 7 feet to the William H. Marshall Memorial Bridge, about 1.7 miles above the waterway, thence in 1976, 6 feet to the junction of South Fork, thence 6 feet in South Fork for 1.4 miles, thence 3½ feet in South Fork and South New River Canal to the junction with Dania Cut-Off Canal. At Tarpon Bend, 0.6 mile above the mouth, the channel is narrow and there are strong currents; also, heavy traffic can be expected here. In 1981, a submerged piling was reported in South Fork in about 26°06'13"N., 80°09'35"W. In 1978, a submerged obstruction marked by a steel pipe was reported in South New River Canal in about 26°05.0'N., 80°11.1'W.

(523) Above the junction of New River with the Intracoastal Waterway, New River and South Fork are crossed by the following bridges with bascule spans and overhead cables: U.S. Route 1 passes through a tunnel under the river at Southeast Sixth Avenue; at 1.1 miles, Southeast Third Avenue highway bridge, clearance 16 feet; at 1.3 miles, South Andrews Avenue Bridge, clearance 21 feet; at 1.4 miles, Florida East Coast Railway bridge, clearance of 4 feet; an overhead power cable just above the railway bridge has a clearance of 80 feet; at 1.7 miles, the William H. Marshall Memorial Bridge with a clearance of 20 feet at the center; the overhead power cable just above this bridge has a clearance of 80 feet; on the South Fork, 0.8 mile above the mouth of the fork, Southwest 12th Street bridge has a clearance of

21 feet; at 2.7 miles, two parallel fixed highway bridges, clearance 55 feet; at 2.8 miles, Seaboard System Railroad (SCL) bridge, clearance 2 feet; the overhead power cable at the bridge has a clearance of 71 feet; at 3.8 miles, State Highway 84 bridge has a 40-foot bascule span with a clearance of 21 feet; and at 3.9 miles, state highway 595 bridge has a clearance of 40 feet. The Southeast Third Avenue bridge, South Andrews Avenue bridge, William H. Marshall Memorial Bridge, and Davie Boulevard bridge are equipped with radiotelephones; the bridgetenders monitor VHF-FM channel 13. (See **117.1 through 117.59, 117.313, and 117.315**, chapter 2, for drawbridge regulations.) Overhead power cables close southward and 0.1 mile southward of the State Highway 84 bridge have a least clearance of 50 feet.

(524) The mean range of tide at the Andrews Avenue Bridge, New River, is 2.1 feet. The range increases towards the mouth of the river and is 2.4 feet at the Bahia Mar yacht basin, Fort Lauderdale. Strong currents may be encountered above the Southeast Sixth Avenue Tunnel; strangers going upriver are advised to obtain information from the City Dockmaster.

(525) **Speed** in New River is limited to no wake.

(526) Both banks of New River between U.S. Route 1 highway tunnel and Florida East Coast railroad bridge are owned by the city. Along the bulkheads, berths with water and electricity are provided for yachts. Arrangements for space are made with the city **dockmaster,** whose office is at 14 South New River Drive East. He has police powers over all the waterways within the city limits.

(527) **South New River Canal** joins the South Fork of New River with the Dania Cut-Off Canal. Overhead power cables across it have a minimum clearance of 60 feet.

### Manatees

(528) A regulated speed zone for the protection of manatees is in the vicinity of the powerplant at Fort Lauderdale near the junction of South New River Canal and Dania Cut-Off Canal. (See Manatees, chapter 3.)

(529) A number of large storage yards are on New River about 2.5 miles above the city-owned berthing area. Several repair yards and storage basins are up the river. The largest shipyard has a marine elevator with a capacity of 300 tons, and a marine railway that can handle vessels up to 120 feet. Any hull or engine repairs can be made, and machine shops are available. Some yards have cranes of up to 50-ton capacity for rail-water or truck-water transfer.

(530) From New River, the Intracoastal Waterway continues southward through the **Stranahan River.** At **Mile 1065.9,** Fort Lauderdale Southeast 17th Street (State Route A1A) highway bridge has a twin bascule span with an authorized clearance of 55 feet at the center. The bridgetender monitors VHF-FM channel 13. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) **Speed** in Stranahan River is limited to no wake.

(531) The entrance channel to the Lauderdale Yacht Club is on the west side of Stranahan River about 0.4 mile north of the Fort Lauderdale Southeast 17th Street bridge. The channel to the club from the Intracoastal Waterway is reported to be marked by a private lighted range and privately maintained piles. Depths of 7 feet are reported in the channel, and 5 feet alongside the pier and bulkhead. Water, electricity, and dockage are available for members.

(532) There are five marinas on the west side of Stranahan River. Two are close northward of the Southeast 17th Street highway bridge, and the other three are near the head of **Seminole River,** the first canal extending westward just north of the bridge. (See the small-craft facilities tabulation on chart 11467 for services and supplies available.) In 1983, the reported controlling depth in Seminole River was 12 feet from the Intracoastal Waterway and 4 feet near the head.

(533) The **Mercedes River** extends eastward from the Intracoastal Waterway at **Mile 1065.7** to **Lake Sylvia.** A highway bridge crossing the river has a 26-foot fixed span with a clearance of 7 feet. In 1983, the reported controlling depth in Mercedes River was 8 feet from the waterway to the bridge. A large marina on the south side of the entrance has gasoline, diesel fuel, water, ice, electricity, restrooms, showers, berthing, marine supplies, motel, restaurant, and provisions available. Depths alongside the piers and bulkheads are 15 to 4½ feet.

(534) A highway bridge over **Marietta River,** which extends southward from Mercedes River, has a 23-foot fixed span with a clearance of 8 feet. From just south of the bridge, **Marion River** extends eastward into **Mayan Lake** from Marietta River.

(535) **Port Everglades, Mile 1066.3,** and **Port Laudania** on Dania Cut-Off Canal are described in chapter 10.

(536) **Fort Lauderdale Coast Guard Station** is on the east side of the waterway at **Mile 1066.8.**

(537) **Whiskey Creek (Dania Sound)** (chart 11470), which is about 1.6 miles long, lies between the Intracoastal Waterway and the ocean. Highway and pedestrian bridges crossing the sound have least clearances of 20 feet horizontal and 10 feet vertical. Overhead power and telephone cables at the bridges at the north and south entrances have a minimum clearance of 30 feet.

(538) At **Mile 1067.5,** the waterway enters a land cut.

### Manatees

(539) Regulated speed zones for the protection of manatees are in Port Everglades west of the line between Light 11 and Light 12 and south along the Intracoastal Waterway through and including the discharge canal of the power plant at Port Everglades and the Dania Cut-off Canal.

(540) **Dania Cut-Off Canal** enters the waterway at **Mile 1068.8.** The canal was constructed by the county for drainage purposes, and during floodwater periods it

may cut through to the ocean. In 1983, the canal had a reported controlling depth of 9 feet to the first turn about 0.9 mile above the Intracoastal Waterway, thence 5½ feet to the powerplant at the intersection with South New River Canal, a distance of about 5 miles. An overhead power cable with a clearance of 130 feet crosses the canal about 0.6 mile westward of the intersection with the Intracoastal Waterway. Numerous commercial vessels use the first mile of the canal when calling at Port Laudania. These vessels are generally size and draft restricted to the center of the channel for their safe navigation. To prevent dangerous meeting situations, vessels over 50 feet in length or over 7 feet of draft should give Security calls on VHF-FM channels 13 and 16 prior to transiting the Dania Cut-off Canal. An unmarked rock awash extends about 45 feet into the channel on the south side of the canal about 0.8 mile above the entrance.

(541) Obstructions, marked by buoys, have been reported in the canal about 1 and 1.2 miles above the entrance.

(542) In 1985, a sunken wreck was reported about 1.5 miles above the entrance in about 26°03'33"N., 80°08'28"W.

(543) There are several small-craft facilities in the vicinity of Port Laudania. (See the small-craft facilities tabulation on chart 11467 for services and supplies available.)

(544) A yacht basin is in the canal at **Dania,** 1.7 miles from the waterway has water, electricity and a 20-ton lift available; hull and engine repairs can be made. West of the yacht basin, bridges, overhead cables, pipelines, and other obstructions restrict the channel width to 28 feet and overhead clearance to 9½ feet.

(545) **Dania Beach** (State Route A1A) highway bridge, **Mile 1069.4,** has a bascule span with a clearance of 22 feet at the center. The highway bridge across the waterway at **Mile 1070.5** (locally known as Sheridan Street bridge) has a bascule span with a clearance of 22 feet at the center. The bridgetenders monitor VHF-FM channel 13. Just south of the bridge and on the east side of the waterway there are several places where some supplies may be obtained. Depths are 8 to 12 feet alongside the bulkhead.

(546) At the southeast corner of **North Lake, Mile 1072.1,** a yacht basin has berths with electricity, water, ice, and depths of 6 to 8 feet reported alongside in 1998; there is a paved launching ramp.

(547) **Hollywood, Mile 1072.2,** is about 1 mile west of the waterway. On the ocean side east of the city is the Hollywood Beach Hotel, a very prominent structure. Gasoline can be obtained at a service station on the east side of the waterway. There are no repair facilities.

(548) **Hollywood Boulevard** (State Route 820) bridge, **Mile 1072.2,** has a bascule span with a clearance of 25 feet at the center. The bridgetender monitors VHF-FM channel 13. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(549) At **Hallandale Boulevard, Mile 1074.0,**State Route 824 highway bridge has a bascule span with a clearance of 22 feet. The bridgetender monitors VHF-FM channel 16 and works on channel 13. See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) In March 1999, a replacement bridge was under construction with a design clearance of 24 feet.

(550) At **Mile 1076.3,** the N.E. 192nd Street fixed highway bridge has a clearance of 65 feet.

(551) At **Mile 1076.3,** the waterway enters shallow **Dumfoundling Bay.** A dredged channel, marked by private daybeacons and lights, leads west from the waterway at **Mile** 1076.5 to an industrial area. In 2001, the reported controlling depth was 5 feet. Care is required here as spoil banks are close aboard on both sides of the dredged channel through the bay. A sharp turn to the south is necessary to enter **Biscayne Creek** at **Mile 1077.3.**

(552) The Florida Department of Natural Resources has established a **slow-no wake speed zone** in Biscayne Creek from **Mile 1077.3** to **Mile 1078.5.**

(553) **Maule Lake,** on west side of the waterway at **Mile 1077.3,** is entered through a privately marked channel leading from the waterway at the southwest corner of Dumfoundling Bay. In 1983, the reported controlling depth in the channel was 12 feet, and depths in the lake were 2½ to 17 feet over rocky bottom. At a marina on the west shore of the lake is berthage for 280 boats with depths from 18 to 8 feet alongside; controlling depth is 8 feet to the piers. Gasoline, diesel fuel, water, ice, pumpout, wet and dry storage are available. A 68-ton mobile lift is available for complete marine repairs.

(554) At **Mile 1078.0,** State Route 826 highway bridge (locally known as Sunny Isles bridge) crossing the waterway, has a bascule span with a clearance of 30 feet. (See **117.1 through 117.59 and 117.261,** chapter 2, for drawbridge regulations.) The overhead power cable 55 yards north of the bridge has a clearance of 71 feet.

(555) On the east bank of the waterway, at **Mile 1078.0** and just south of the highway bridge, a marina has berths, gasoline, diesel fuel, water, ice, electricity, and marine supplies. There is a 30-ton marine lift that can handle boats for hull, engine, and electronic repairs. In April 1983, the reported controlling depth was 21 feet from the waterway to the marina, and there were depths of 7 to 8 feet alongside.

(556) **Oleta River** leads westward from Biscayne Creek, at **Mile 1078.0,** and continues on into Maule Lake. The reported controlling depths, in 1983, were 4 feet from the Intracoastal Waterway to the highway bridge 1.5 miles above the entrance, thence 2½ feet into Maule Lake. Another fixed bridge crosses the river about 0.3 mile above the entrance.

(557) The Intracoastal Waterway enters the northern end of **Biscayne Bay** at **Mile 1078.5.** The bay is a shallow body of water extending about 33 miles southward, and is unexcelled as a yachting and small-boating area. The upper part of the bay is very shallow, about 2 miles wide, and is separated from the Straits of Florida by a narrow peninsula, Virginia Key, and by Key Biscayne. The remainder of the bay south of Miami has an average

width of about 7 miles, general depths of 9 to 10 feet with several places having depths of 13 to 15 feet, and is separated from Hawk Channel by a number of keys and coral banks through which there are several narrow and shallow channels. In the lower part of Biscayne Bay and in the bays and sounds southward, the water is so clear on calm days that the bottom can be seen at considerable depths. On windy days, the water becomes milky and opaque.

(558) At **Mile 1079.5,** an unmarked channel leads southward to Bakers Haulover Inlet. In 1983, the controlling depth in the channel was 6½ feet at midchannel to the highway bridge crossing the inlet. A large municipal marina for the use of yachtsmen and party fishermen is on the east side of the channel just south of the waterway. The marina may also be approached through an unmarked channel that leads east from the waterway at **Mile 1079.8.** In 1983, the controlling depth was 8 feet in the channel and in the basin, and thence in 1983, 7 feet reported at the finger piers. Gasoline, diesel fuel, water, ice, and electricity are available. There is berthage for 58 boats; a charge is made for docking. A launching ramp is also available.

(559) The Florida Department of Natural Resources has established a **slow-no wake speed zone** where the unmarked channels converge just north of Bakers Haulover Inlet from **Mile 1079.5** to **Mile 1079.8.**

(560) **Bakers Haulover Inlet** is described in chapter 10.

(561) **Bal Harbour,** a private development, is immediately southward of Bakers Haulover Inlet. Several large hotels are conspicuous landmarks.

(562) At **Mile 1080.4**, an unmarked channel leads south-southeasterly to Bal Harbour yacht basin that has a depth of 14 feet. The channel had a reported controlling depth of 7 feet in 1983. The yacht basin is for members only, but other craft may take refuge here during bad storms.

(563) **Indian Creek** extends southward about 6 miles along the eastern part of Biscayne Bay from Bal Harbour to Collins Canal in Miami Beach. In 1963, the controlling depth was 5 feet in Indian Creek. A highway bridge and a pipeline bridge across the creek from Bal Harbour to **Bay Harbor Islands** each have a 43-foot fixed span with a clearance of 12 feet. An overhead power cable on the north side of the bridge has a clearance of 51 feet. About 0.5 mile southward, the bridge at **Surfside** has a 40-foot fixed span with a clearance of 12 feet. The bridge between **Atlantic Heights** and **Normandy Isle** has a 29-foot fixed span with a clearance of 5 feet.

(564) On the east side of **Allison Island,** Indian Creek is crossed by West 63rd Street bridge with a bascule span having a clearance of 11 feet. (See **117.1 through 117.49** , chapter 2, for drawbridge regulations.) A highway bridge over the channel west of the island has a 23-foot fixed span with a clearance of 6 feet. Southward of Allison Island, fixed bridges crossing Indian Creek limit the channel to a minimum width of 41 feet and a clearance of 12 feet.

(565) From the southern end of Indian Creek, **Collins Canal** leads southwesterly along the southeast side of the prolongation of **Venetian Causeway.** In 1983, the reported controlling depth was 3 feet in the canal. Fixed bridges crossing the canal limit the channel width to 23 feet and the clearance to 5 feet.

(566) At **Mile 1080.9**, a channel on the west side of the Intracoastal Waterway leads northwestward to the west shore, follows the shore in a northerly direction to **New Arch Creek,** and follows the creek about 0.8 mile westward to two marinas where berths with electricity, gasoline, diesel fuel, water, ice, and marine supplies are available. A 30-ton mobile hoist is also available; hull, engine, and electronic repairs can be made. The channel is marked by daybeacons.

(567) At **Mile 1081.4, Broad Causeway** (NE 123rd Street) highway bridge crossing the Intracoastal Waterway has a bascule span with a clearance of 16 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channels 13 and 16. The Florida Department of Natural Resources has established a **slow-no wake speed zone** in the Intracoastal Waterway extending 100 yards on both sides of the Broad Causeway highway bridge. Immediately south of the causeway, a privately marked channel leads to a marina on the west side of the bay.

(568) **Miami Beach Channel,** about 0.5 mile south of Broad Causeway, is a natural channel that leads southeastward to **Biscayne Point,** thence along the west and south sides of **Normandy Isle,** thence along the east shore of the bay southward to Venetian Causeway and Collins Canal in **Miami Beach,** and thence along the west side of Miami Beach southward of MacArthur Causeway and **Meloy Channel**. In 1983, the reported controlling depths were 7 feet from the waterway southward to the Julia Tuttle Causeway, except for shoaling to 3 feet about 0.4 mile above the causeway at Daybeacon 22, thence 9 feet to Meloy Channel.

(569) Four bridges cross the channel. At Normandy Isle the easterly bascule span of the 79th Street Causeway has a clearance of 25 feet at the center. The large marina on **Treasure Island** at the west end of bridge has berths with electricity, water and ice. In 1998, depths of 9 feet were reported alongside. The easterly fixed span of the 36th Street Causeway has a clearance of 35 feet; Venetian Causeway bascule span between Rivo Alto Island, the most easterly of the Venetian group, and Belle Isle has a clearance of 9 feet. The fixed bridge near the east end of MacArthur Causeway has a clearance of 35 feet. (See **117.1 through 117.59 and 117.269**, chapter 2, for drawbridge regulations.)

(570) A marina on Miami Beach Channel, just north of the MacArthur Causeway Bridge, has berthage with electricity, gasoline, diesel fuel, water, ice, some marine supplies; hull, engine, and electronic repairs can be made. On the south side of the bridge on Meloy Channel, is a charter-boat facility. Meloy Channel is described in chapter 10.

(571) At **Mile 1083.8,** a dredged channel leads southeastward from the Intracoastal Waterway to a private yacht basin in **Harbor Island** just north of the 79th Street Causeway. In 1983, the reported controlling depth was 5 feet. The channel is marked by private piles.

(572) **Seventy-Ninth Street Causeway, Mile 1084.6,** has a bascule span over the waterway that has a clearance of 25 feet at the center. The Florida Department of Natural Resources has established a **slow-no wake speed zone** in the Intracoastal Waterway extending 100 yards on both sides of the 79th Street Causeway Bridge.

(573) **Little River** flows into the west side of Biscayne Bay at **Mile 1084.9.** Yachts tie up along the banks of the river. In 1975, the controlling depth was 6 feet to the highway bridge about 0.6 mile above the mouth. The bridge (U.S. Route 1) has a 34-foot fixed span with a clearance of 8 feet. Boats that can clear this bridge can continue upstream to the dam at the Florida East Coast Railway bridge, which is the head of navigation. The controlling depth was 3 feet, in 1963, from the highway bridge to the dam.

(574) A boatyard is on the north shore of Little River, about 0.6 mile above the mouth. The yard has a 20-ton marine lift, and a marine railway that can handle craft up to 50 feet. Gasoline, water, ice, electricity, and marine supplies are available. There is berthage for about 15 boats with 7 to 10 feet reported alongside in 1983. There is a machine shop on the premises; hull and engine repairs can be made.

(575) **Julia Tuttle (Thirty-Sixth Street) Causeway, Mile 1087.1,** has a fixed span over the waterway with a clearance of 56 feet, which is the least overhead clearance of the fixed bridges over the main route of the Intracoastal Waterway between Norfolk and Miami.

(576) At **Sunset Harbor Channel** leads eastward through Biscayne Bay and connects with Miami Beach Channel on the east side of the bay just northward of Belle Isle. The channel is marked by private lights and daybeacons and in 1991, the controlling depth was 6 feet except for lesser depths to 3 feet in the vicinity of Miami Beach Channel Daybeacon 30.

(577) **Venetian Causeway, Mile 1088.6,** has a bascule span over the waterway with a clearance of 12 feet at the center. (See **117.1 through 117.59 and 117.261**, chapter 2, for drawbridge regulations.)

(578) The Florida Department of Natural Resources has established a **slow-no wake speed zone** from 100 yards north of the Venetian Causeway bascule bridge at **Mile 1088.5** to the southern tip of Claughton Island, **Mile 1090.5.**

(579) **MacArthur Causeway**, **Mile 1088.8**, has a fixed span with a clearance of 65 feet. The bridge connects with Watson Island.

(580) At **Mile 1089.4,** the waterway is crossed by a fixed highway bridge with a clearance of 65 feet. The bridge connects with **Port of Miami (Dodge Island).** The trestle of the old bascule bridge remains but is reportedly maintained in the open position.

(581) **Miami, Miami Beach,** and **Miami Harbor, Mile 1089.1** are described in chapter 10.

(582) At **Fishermans Channel,** a private channel maintained by the City of Miami, leads northeastward from the waterway to a turning basin off the southwest corner of Dodge Island, thence eastward to the turning basin at Fisher Island. The channel that connects the waterway to the turning basin off Dodge Island has natural depths to 8 feet, thence in 1988-1989, the controlling depth was about 19 feet to the turning basin at Fisher Island, with lesser depths along the shore of Dodge Island. The channel is well marked. About 1.1 miles westward of Fisher Island, a natural channel leads southward from Fishermans Channel to Rickenbacker Causeway. The channel is little used and is unmarked. In 1983, it was reported to have a depth of 6 feet.

(583) At **Mile 1090.5,** a dredged channel leads north-northwest from the waterway, west of **Claughton Island,** to the mouth of the Miami River. This channel is the approach to Miami River from the south. In 1967, the centerline controlling depth was 8 feet. A highway bridge with a 49-foot fixed span and a clearance of 8 feet crosses the channel from the mainland to Claughton Island.

(584) From Miami the Intracoastal Waterway continues southward along the waterfront, thence through Miami South Channel to **Rickenbacker Causeway** at **Mile 1091.6**. The causeway has a fixed span over the waterway with a clearance of 76 feet. The approach spans of the old bascule bridge have been converted to fishing piers.

(585) The Florida Department of Natural Resources has established a **slow-no wake speed zone** in the Intracoastal Waterway extending 100 yards on both sides of the Rickenbacker Causeway.

(586) A hospital is about 1.5 miles southwestward of Rickenbacker Causeway. The hospital pier can be reached through a privately marked channel.

(587) Northeastward of the Bay Bridge of Rickenbacker Causeway on the west side of Virginia Key is the Commodore Ralph Munroe Marine Stadium, a marine race course, which had a reported depth of 6 feet. The grandstand on the south side and the Seaquarium southeastward of it are prominent.

(588) Two marinas and a boatyard are in a cove at the east end of the causeway. Berths with electricity, gasoline, diesel fuel, ice, supplies, a 2½-ton hoist, hull and engine repairs, and sewage pumpout are available.

(589) About 2 miles south of Rickenbacker Causeway, **Crandon Park Marina Channel,** privately marked by lights, buoys, and daybeacons, leads northeasterly in **Bear Cut** to the Dade County Yacht Basin in the bight of Northwest Point, Key Biscayne. The reported controlling depth from Bear Cut to the basin was 6 feet in 2003; thence in 2004, 5 feet was reported in the basin. The basin is used by party fishing boats. Gasoline, diesel fuel, water, ice electricity, limited berthage, a pumpout station, a launch ramp, and some marine supplies

are available. The highway bridge over Bear Cut has a 48-foot fixed span with a vertical clearance of 16 feet. A daybeacon marks the eastern approach to Bear Cut outside the keys.

(590) About 2.3 miles southward of Rickenbacker Causeway are two channels leading westward to the facilities at **Dinner Key** in **Coconut Grove.** Both channels are marked. The northerly channel had a reported controlling depth of 4½ feet in 1983.

(591) The Coral Reef Yacht Club is reached through the northern channel. Marine supplies are available, and there is a launching ramp.

(592) **Dinner Key Channel,** the southerly channel, leads to the large **Dinner Key Yacht Basin.** The channel is marked by lights and daybeacons. In 1998, the reported controlling depth was 7 feet in the channel and 8 feet in the basin. The yacht basin is maintained by the city of Miami and has five piers with water and electrical connections; a charge is made for berthage assigned by the dockmaster. There is berthage for 370 boats with depths of 5 to 8 feet alongside. A launching ramp is available.

(593) Several privately owned marinas and boatyards are northward and southward of the city yacht basin. Gasoline, diesel fuel, water, ice, marine supplies, pumpout and wet storage can be obtained. Fixed lifts to 30 tons are available at the boatyards; complete engine, hull, and electronic repairs can be made.

(594) **Four-Way Channel** is 3 miles south of Rickenbacker Causeway and leads westward to some private piers and a mooring area; the controlling depth in the channel was reported to be 4 feet on centerline in 1999-2008. A privately maintained unlighted **296°** range and daybeacons mark the entrance channel.

(595) **Entrada Channel**, about 0.5 mile southward of Four-Way Channel, is marked by private daybeacons. In 1999, the reported controlling depth was 3½ feet.

(596) **Coral Gables Waterway** is 4.2 miles south of Rickenbacker Causeway. It is a dredged channel through coral, and extends westward about 2 miles inland to U.S. Route 1 highway bridge. The canal, used for drainage purposes, has no docks along the banks; craft tie up to the banks. The reported controlling depth was 5 feet in 1999. The entrance is marked by a light and daybeacons. In 1979, shoaling to an unknown extent was reported between Daybeacons 5 and 7.

(597) **Coral Gables** is a picturesque resort that joins Miami on the southwest. The tower of a hotel is a conspicuous landmark that shows over the lower part of Biscayne Bay.

(598) At **Matheson Hammock Beach**, **Mile 1097.5**, on the west side of Biscayne Bay, there is a marina which has berths with depths of 4 to 7 feet alongside the piers. There is a launching ramp, gasoline, diesel fuel, water, ice, electricity, pump-out station, and storage facilities. The two entrance channels are marked by private daybeacons and the south channel is marked by a **347°** lighted range and a light. In 1999, 4 feet was reported in the north channel; in 2004, 5.5 feet was reported in the south channel. The remains of a daybeacon structure at the entrance to the south channel in about 25°40'25"N., 80°15'28"W., are reported to be a hazard to navigation; caution is advised.

## Charts 11465, 11451

(599) **Snapper Creek Canal**, about 1.3 miles south of Matheson Hammock, is a drainage canal navigable to a salinity structure about 1.3 miles above the entrance. A yacht basin with services is just upstream of the highway bridge 1 mile above the entrance. The fixed bridge has a 20-foot span with a clearance of 11 feet. The entrance to the canal is marked by private daybeacons and in 1999, had a reported controlling depth of 5 feet.

(600) At **Kings Bay, Mile 1102.2,** on the west side of Biscayne Bay 9 miles southward of Rickenbacker Causeway, there is a yacht and country club. There is berthage for 150 boats with depths of 7 to 10 feet alongside the piers. Gasoline, diesel fuel, water, ice, electricity, and restaurant are available and there is a launching ramp. A 6-ton hoist can handle craft for engine and electronic repairs. **Cutler Channel,** leading to the yacht basin and a powerplant, is marked by private aids. In 1999, there was a reported channel depth of 6 feet.

(601) The Intracoastal Waterway crosses **Featherbed Bank** at **Mile 1107.6** and is marked by daybeacons and lights. Another channel through Featherbed Bank about 2.5 miles eastward of the waterway is marked by a light and daybeacons. In 1983, the reported controlling depth was 8 feet. Care must be taken to stay in the center of the channel; the appearance of the water is the best guide, as the shoals on each side are usually visible. The daybeacon northeastward of Featherbed Bank is not easily seen at a distance. Good landmarks are the tower resembling a lighthouse on **Boca Chita Key northward** of **Sands Key** and the 415-foot stacks of the powerplant at Turkey Point (25°26.1'N., 80°19.8'W.).

## Charts 11465, 11463, 11451

(602) **Biscayne National Park**, a protected area, is between **Mile 1097.0** and **Mile 1119.2.** The National Park Service has established an anchorage area off the northern end of **Elliott Key,** opposite **Mile 1110.0.** The anchorage is marked by buoys. A park ranger is stationed at **Elliott Key Harbor** opposite **Mile 1112.4.** Berths and camp sites are available. No services are available.

(603) From **Mile 1109** to **Mile 1113.2** the Intracoastal Waterway passes through an Air Force training area. Mariners are urged to exercise caution because training drills utilizing helicopters, parachutes, small one-man liferafts, and support craft are conducted daily in the area.

## Charts 11463, 11464, 11451

(604) The **Homestead Bay Front Park Marina** at the entrance to **North Canal,** 5 miles west of **Mile 1111.5,** is entered just south of **Convoy Point.** The entrance is marked by lights and daybeacons. In 1985, the entrance channel had a reported controlling depth of 4 feet; in 1983, depths of 4 feet were available alongside the piers. Slips are available for berthing 70 boats up to 40 feet; there is a launching ramp and a 3-ton hoist for craft to 25 feet. Gasoline, water, ice, and electricity are available at the basin.

(605) A barge channel on the west side of Biscayne Bay, with a reported centerline controlling depth of 7½ feet in 1983, leads from water of the same depth in the bay for a distance of about 3.1 miles to a powerplant on **Turkey Point, Mile 1113.7.** The channel is marked by a light and buoys. Two 415-foot stacks at the powerplant are prominent.

(606) **Caesar Creek,** 1.2 miles southeast of **Mile 1115.0,** between **Elliott Key and Old Rhodes Key 11463Old Rhodes Key,** connects Biscayne Bay with Hawk Channel. The reported controlling depth was 8 feet in 1983, except for shoaling to 2 feet at the bayside entrance. The entrance from Hawk Channel is marked by a light, and private daybeacons mark the channel through the creek.

(607) The Intracoastal Waterway leaves Biscayne Bay via a straight dredged cut through **Cutter Bank** at **Mile 1117.3** and enters **Card Sound.** The sound is a body of water about 5 miles long and 2.7 miles wide with depths of 7 to 12 feet in the center.

(608) **Angelfish Creek,** 1.5 miles southeast of **Mile 1120.0** between **Palo Alto Key** on the north and **Key Largo** and **Angelfish Key** on the south, connects Card Sound with Hawk Channel. The controlling depth, in 1983, was reported to be 5 feet. The channel is marked by lights and daybeacons.

(609) Good anchorage in depths of 9 feet is available in Card Sound on the south side of **Pumpkin Key,** 1.5 miles southeast of **Mile 1121.8.**

(610) In 1977, numerous piles were reported to extend southeast from Pumpkin Key to Snapper Point on the west side of Key Largo. Caution is advised when navigating in this area.

(611) Gasoline, diesel fuel, lubricating oil, water, ice, and electricity are available at the Key Largo Anglers Club, 1.8 miles southeast of **Mile 1122.4.** A lift is available for hauling out boats up to 35 feet. A prominent microwave tower is a good landmark on the westerly side of the Card Sound and Little Card Sound area. Another microwave tower, just west of Ocean Reef Harbor on Key Largo, is also prominent.

(612) From Card Sound the waterway follows **Card Point Cut,** a dredged cut across **Card Bank, Mile 1124.4,** the shoal that separates Card Sound from **Little Card Sound.** Little Card Sound has depths of 6 to 9 feet in the center.

(613) The waterway enters a dredged channel through the shoal that separates Little Card Sound and **Barnes Sound** opposite **Barnes Point, Mile 1126.8.** A fixed highway bridge with design clearance of 65 feet crosses the waterway at Barnes Point. An overhead power cable northward of the bridge has a clearance of 88 feet. Barnes Sound is about 6 miles long and 3 miles wide, with depths of 7 to 10 feet in the center.

(614) Near the south end of Barnes Sound the waterway enters **Jewfish Creek, Mile 1132.8.** The highway bridge crossing the creek at **Cross Key, Mile 1134.1,** has a fixed span with a clearance of 67 feet. Overhead power cables just southwest of the bridge have a minimum clearance of 85 feet. On the southwest side of the bridge are two marinas with berths, electricity, gasoline, diesel fuel, water, ice, launching ramp, and a pump-out station.

(615) The waterway continues southward into **Blackwater Sound,** a body of water about 3 miles square that has depths of 7 to 8 feet in the center. A cut leads from Blackwater Sound into the southern part of **Lake Surprise**,in the northeast end of the sound. In 1983, the reported controlling depth in the dredged cut was 4 feet. A boatyard is on a canal that extends eastward from the lake 0.4 mile east of the cut. An 11-ton mobile lift is available for hull, engine, and electronic repairs. In 1983, it was reported that Lake Surprise was an excellent harbor of refuge, used frequently as an over-night anchorage by small craft. Several marinas are located at the southeast end of Blackwater Sound. Gasoline, diesel fuel, water, ice, marine supplies, and storage facilities are available; lifts to 9 tons are available for limited engine, hull and electronic repairs.

(616) The waterway follows **Dusenbury Creek** from Blackwater Sound to **Tarpon Basin**.

## Charts 11464, 11451

(617) The waterway follows an east-to-west course across Tarpon Basin and on the west side exits through **Grouper Creek** into **Buttonwood Sound;** in the eastern end of the creek, the deepest water is close to the south bank. Tarpon Basin is reported to offer good shelter from winds from any direction, but the holding ground is poor with thick grass over the bottom.

(618) From Buttonwood Sound, which has a depth of 5 to 7 feet, the Intracoastal Waterway follows **Baker Cut, Mile 1143.0,** into **Florida Bay.** The route across the bay crosses many bars and is well marked by lights and daybeacons.

(619) A protected area of the **Everglades National Park** is in the northern part of Florida Bay. Landing on the beaches or keys of this area without the authorization of the Superintendent of the Everglades National Park is prohibited, except on those beaches or keys marked by a sign denoting the area as being open.

(620) **Community Harbor,** a bight on the southerly end of Key Largo and 1 mile southwest of **Mile 1150.0,** is the bayside waterfront of **Tavernier.** The entrance is marked by daybeacons and stakes. In 2004, the reported approach depth to the wharf was 4.5 feet. A marina at the southern end of the harbor has berths with electricity, gasoline, diesel fuel, water, ice, a pump-out station and marine supplies. A 60 ton lift is available for hauling out vessels for hull, engine, and electronic repairs.

(621) **Tavernier Creek,** just westward of Tarvernier, in 1983, had a reported controlling depth of 4 feet to Hawk Channel and is frequently used by local fishing craft. The south entrance to the creek is marked by a light and daybeacons, and the north entrance is marked by daybeacons. In 1986, a submerged obstruction was reported 0.25 mile northeast of the light in about 24°59'24"N., 80°31'06"W. A fixed highway bridge near the southern end of the creek has a clearance of 15 feet. In 1982, it was reported that strong currents may be experienced in the vicinity of the bridge, particularly during spring tides. A fixed highway bridge across the creek has a least clearance of 15 feet. Gasoline, diesel fuel, water, ice, and some marine supplies are available at the small-craft facilities near the bridge.

(622) **Cross Bank, Mile 1152.5,** is crossed by **Cowpens Cut,** a straight dredged channel marked by lights and daybeacons.

(623) At **Mile 1155.0,** in **Cowpens Anchorage,** there is a marina with gasoline, diesel fuel, water, ice, a pump-out station, berths with electricity and a launching ramp. In 2004, the reported approach depth was 6 feet with 5 feet alongside.

(624) **Snake Creek,** 1.3 miles south of **Mile 1156.0** between **Plantation Key** and Windley Key, is used by local fishing boats as a passage between the bay and the ocean. In 1984, the reported controlling depth through the creek was 4 feet. The entrance to the creek from the ocean side is marked by daybeacons and a light. The highway bridge across the creek has a bascule span with a clearance of 27 feet. (See **117.1 through 117.59 and 117.331**, chapter 2, for drawbridge regulations.) On the north side of the bridge there is a small marina and a fishing camp. Gasoline, engine repairs, water, ice, some marine supplies, and a launching ramp are available. Currents are strong through the creek, and especially at the bridge. Gasoline, water, and ice are available at the wharf at the ocean entrance on Windley Key.

(625) **Islamorada Coast Guard Station** is on the east side of Snake Creek at 24°57.2'N., 80°35.2'W.

(626) **Windley Harbor,** 1.7 miles south of **Mile 1157.2,** is a good but seldom used refuge that is well protected from all directions. **Whale Harbor Channel,** west of **Wilson Key,** is marked by a light and daybeacons. In 1983, the channel had a reported controlling depth of 5 feet. Two fixed bridges over the channel, one highway and one pedestrian, have a least clearance of 33 feet horizontal and 12 feet vertical. Berths with electricity, gasoline, diesel fuel, water, ice, and marine supplies are available at Windley Harbor.

(627) **Upper Matecumbe Key** is 2 miles southeast of **Mile 1160.0**. **Islamorada** is on the key. The **Florida Key Memorial** is in about the middle of the key.

(628) Several marinas are near the center of the key on the northwest side. (See the small-craft facilities tabulation on chart 11451 for services and supplies available.)

(629) At **Mile 1160.7**, the waterway passes through **Steamboat Channel**, a dredged cut through **Shell Key Bank**. The channel in the cut is marked by lights and daybeacons.

## Charts 11449, 11451

(630) **Shell Key Channel** and **Race Channel,** just to the northwestward of Upper Matecumbe Key, are used by small sport-fishing craft. These channels join to form **Teatable Key Channel** connecting the Intracoastal Waterway and Hawk Channel. Teatable Key Channel is crossed by two fixed bridges, one highway and one pedestrian, and an adjacent overhead pipeline with least clearances of 33 feet horizontal and 10 feet vertical. In 1983, the reported controlling depth was 8 feet from Hawk Channel to Florida Bay through Teatable Key Channel and Race Channel.

(631) There are marinas and repair facilities at the southwest end of Upper Matecumbe Key. (See the small-craft facilities tabulation on chart 11451 for services and supplies available.)

(632) **Indian Key Channel,** 1.7 miles south of **Mile 1162.3,** one of the routes connecting Florida Bay and Hawk Channel, is described in chapter 11.

(633) **Lignumvitae Channel,** 1.6 miles south of **Mile 1163.3** and west of Lignumvitae Key, forms a passage from the Intracoastal Waterway to Hawk Channel. Two fixed bridges that cross the channel, one highway and one pedestrian, have least clearances of 32 feet horizontal and 10 feet vertical. Pilings that support overhead power cables close north of the bridges somewhat restrict the channel; local knowledge is advised. Berths with electricity, gasoline, water and ice are available at a marina at the northeast end of Lower Matecumbe Key.

(634) Overhead power cables at the fixed bridges along the highway viaduct between Upper Matecumbe Key and Grassy Key have a minimum clearance of 26 feet, but are submerged at the drawbridges.

(635) **Peterson Key Bank**, **Mile 1165.0**, is crossed by **Bowlegs Cut**. After passing through the cut, traffic may continue southwestward through Channel Five to Hawk Channel. In 1975, the controlling depth was reported to be 7 feet.

(636) **Matecumbe Harbor,** is at the southwest end of **Lower Matecumbe Key**, 1 mile southeast of **Mile 1168.8** via Channel Five. The entrance is marked by a light, and the remainder of the channel is privately marked. In 1983, the controlling depth was reported to be 5 feet in the

entrance, with deeper water inside. Gasoline, diesel fuel, water, ice, electricity, and marine supplies are available at a marina in the southern part of the harbor. A mobile lift can handle craft to 24 feet for hull, engine, and electronic repairs.

(637) **Channel Two,** just west of Matecumbe Harbor, connects Florida Bay and Hawk Channel. In 1975, the reported controlling depth in the channel was 8 feet. The channel is crossed by two fixed bridges, one highway and one pedestrian, with a least clearance of 35 feet horizontal and 11 feet vertical. In 1983, submerged pilings were reported to exist in Channel Two; caution is advised. A daybeacon marks a submerged piling in midchannel south of the bridges.

(638) **Channel Five**, **Mile 1170.6**, one of the main routes by which boats can reach Hawk Channel, is described in chapter 11.

(639) At **Mile 1170.6,** there is a marina on **Fiesta Key** where gasoline, water, ice, restaurant, motel, electricity, and some marine supplies are available. The reported controlling depth in the channel leading to the marina was 3 feet in 1983, with 4 to 5 feet alongside the pier.

(640) At **Mile 1171.6,** there is a marina on Long Key-where gasoline, water, ice, electricity, restaurant, motel, launching ramp, and marine supplies are available. Berthage is limited. The reported controlling depth in the channel leading to the marina and alongside the pier was 3 feet in 1983.

(641) At the west end of **Long Key**, 2.2 miles south of **Mile 1174.2**, berthage with electricity, gasoline, water, ice, a boat launching ramp, and limited marine supplies are available at a marina. **Conch Keys**, 2.4 miles west of the west end of Long Key, are marked by a water tank. The channel to the wharf on the north side of the east key is privately marked. In 1983, the channel had a reported controlling depth of 3 feet, with 2 feet alongside the wharf. Gasoline, water, and other services are available.

(642) At **Mile 1178.7**, the waterway goes through **Channel Key Banks** at **Channel Key Pass**, which is marked by a light and daybeacons.

(643) **Grassy Key** is at **Mile 1181.6**.

(644) **Marathon**, on **Vaca Key** 1.5 miles south of **Mile 1192.0,** is the second largest town on the Florida Keys. There are several small-craft facilities on the north side of Vaca Key at Marathon. (See the small-craft facilities tabulation on chart 11451 for services and supplies available.)

(645) Additional facilities on the south side of Vaca Key at Marathon, and in Boot Key Harbor are described in chapter 11.

(646) A group of four radio towers on the southwest end of Boot Key south of Marathon and three radio towers about 1.1 miles to the east-northeastward of the first group are prominent. An aerolight is at Marathon Airstrip at the east end of Vaca Key.

(647) **Marathon Coast Guard Station** is on the bay side at Marathon.

(648) **Knight Key Channel,** just west of Marathon, had a reported controlling depth of 8 feet in 1975. The fixed highway and pedestrian bridges crossing the channel have a least clearance of 19 feet.

(649) **Bethel Bank, Mile 1193.4,** is a junction point in the Intracoastal Waterway. Vessels may follow the southern route via Moser Channel or Bahia Honda Channel and Hawk Channel to Key West, or the northern alternate route via Big Spanish Channel and the Gulf of Mexico. The southern route is about 14 miles shorter to Key West.

(650) **Pigeon Key,** on the east side of Moser Channel, is marked by white buildings. The viaduct passes high overhead at the key.

(651) **Moser Channel**, Mile 1196.9, and **Bahia Honda Channel (Bahia Honda)**, 7 miles to the westward, connect Florida Bay and Hawk Channel. These channels are described in chapter 11.

## Chart 11445

(652) The Intracoastal Waterway routes through Moser Channel and Bahia Honda Channel rejoin at **Mile 1207.8,** about 2.1 miles south of the bridge over Bahia Honda Channel, and then the route follows the aids in Hawk Channel to Key West. Hawk Channel is described in chapter 11.

(653) **Newfound Harbor Keys Anchorage, Newfound Harbor Channel, Niles Channel, Cudjoe Bay**, and **Bow Channel** are discussed in chapter 11.

(654) From Hawk Channel, the Intracoastal Waterway joins the Main Ship Channel at **Mile 1241.9** about 0.5 mile southward of Key West, and then follows the main channel to **Key West, Mile 1243.8.** The supply and repair facilities at Key West are described in chapter 11.

(655) **Saddlebunch Harbor, Boca Chica Channel**, and **Safe Harbor Channel** are discussed in chapter 11.

## Charts 11448, 11442

### Big Spanish Channel to Key West, north of Florida Keys

(656) The northern alternate route of the Intracoastal Waterway leads northwestward from Bahia Honda through **Big Spanish Channel** to Harbor Key Bank, thence along the north side of the Florida Keys to Northwest Channel, thence to Key West. In 1983, it was reported that the controlling depth for this route was 2 feet. Numerous submerged pilings are also in this channel. Local knowledge is advised.

(657) At **Mile 1214.2A**, the waterway passes through a crooked channel marked by daybeacons southwest of **Big Spanish Key**. Caution should be exercised in this shoal area. Northward of the key the color of the water is a good indication of the channel location.

(658) At **Harbor Key Bank Light 57**, **Mile 1218.3A**, the waterway enters the Gulf of Mexico, turns westward and follows a course of 246° for about 28 miles to the lighted bell buoy at the entrance to **Northwest Channel**, **Mile 1251.1A**. A course closer to the Florida Keys should not be attempted because the landmarks are difficult to identify and the bottom inside the 18-foot contour rises abruptly.

(659) Use charts **11442** and **11441** westward of Johnston Key to Northwest Channel, thence to **Key West**, **Mile 1260.3A**. Northwest Channel and Key West are described in chapter 11.

(660) The recommended routes to Key West are via Hawk Channel or through Big Spanish Channel; these routes have been described earlier.

| TIDAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11534 | Cape Romain | 33°01'N/79°21'W | 5.2 | 4.9 | 0.2 |
| 11534 | Orton Point, Cape Fear River | 34°03'N/77°56'W | 4.6 | 4.3 | 0.1 |
| 11534 | Southport, Cape Fear River | 33°55'N/78°01'W | 4.7 | 4.4 | 0.1 |
| 11534 | Myrtle Beach Airport, ICWW | 33°49'N/78°43'W | 3.3 | 3.0 | 0.2 |
| 11534 | Socastee Bridge, ICWW | 33°41'N/79°00'W | 2.4 | 2.2 | 0.1 |
| 11534 | Myrtle Beach, Springmaid Pier | 33°39'N/78°55'W | 5.6 | 5.2 | 0.2 |
| 11534 | Oaks Creek, 0.5 mi. above ent., Murrells Inlet | 33°32'N/79°03'W | 4.8 | 4.5 | 0.2 |
| 11534 | Georgetown Lighthouse, Winyah Bay | 33°13'N/79°11'W | 4.4 | 4.1 | 0.2 |
| 11534 | Sunset Beach Pier | 33°52'N/78°30'W | 5.4 | 5.0 | 0.2 |
| 11518 | Harbor River entrance, Bulls Bay | 33°03'N/79°32'W | 5.4 | 5.1 | 0.2 |
| 11518 | Five Fathom Creek entrance, Bull Bay | 33°00'N/79°30'W | 5.4 | 5.1 | 0.2 |
| 11518 | Moores Landing, ICWW, Sewee Bay | 32°56'N/79°39'W | 5.6 | 5.2 | 0.2 |
| 11518 | Wharf Creek, Summerhouse Creek, Bulls Bay | 32°55'N/79°37'W | 5.6 | 5.3 | 0.2 |
| 11518 | Capers Creek, S. Capers Island | 32°51'N/79°42'W | 5.5 | 5.1 | 0.2 |
| 11518 | South Dewees Island, Dewees Inlet | 32°50'N/79°44'W | 5.5 | 5.1 | 0.2 |
| 11518 | Limehouse Bridge, Stono River | 32°47'N/80°06'W | 6.2 | 5.8 | 0.2 |
| 11518 | Charleston, Customhouse Wharf | 32°47'N/79°56'W | 5.8 | 5.4 | 0.2 |
| 11518 | Breach Inlet, Isle of Palms | 32°47'N/79°49'W | 5.5 | 5.1 | 0.2 |
| 11518 | Ben Sawyer Bridge, ICWW | 32°46'N/79°51'W | 5.6 | 5.2 | 0.2 |
| 11518 | Pennys Creek, west entrance, Stono River | 32°46'N/80°04'W | 5.9 | 5.6 | 0.2 |
| 11518 | The Cove, Fort Moultrie, Charleston Harbor | 32°46'N/79°51'W | 5.6 | 5.3 | 0.2 |
| 11518 | Elliott Cut entrance, Stono River | 32°46'N/80°00'W | 5.7 | 5.4 | 0.2 |
| 11518 | Fort Johnson, Charleston Harbor | 32°45'N/79°54'W | 5.6 | 5.3 | 0.2 |
| 11518 | Church Flats, Stono River | 32°45'N/80°10'W | 6.9 | 6.6 | 0.2 |
| 11518 | Yonges I., Wadmalaw River, N. Edisto River | 32°42'N/80°13'W | 7.1 | 6.7 | 0.2 |
| 11518 | Bluff Point, Wadmalaw River | 32°39'N/80°15'W | 6.7 | 3.3 | 0.2 |
| 11518 | Dawho Bridge, Dawho River, N. Edisto River | 32°38'N/80°21'W | 6.7 | 6.4 | 0.2 |
| 11518 | Steamboat Ldg, Steamboat Creek, N. Edisto R. | 32°36'N/80°17'W | 6.6 | 6.2 | 0.2 |
| 11518 | Brickyard Pt., Brickyard Creek, Coosaw River | 32°30'W/80°41'W | 8.0 | 7.7 | 0.2 |
| 11518 | Edisto Marina, Big Bay Creek entrance | 32°30'N/80°20'W | 6.5 | 6.2 | 0.2 |
| 11518 | Sams Point, Lucy Pt. Creek, Coosaw River | 32°29'N/80°36'W | 7.2 | 6.9 | 0.2 |
| 11518 | Marine Corps AirStation, Brickyard Ck, Beaufort | 32°28'N/80°42'W | 8.2 | 7.8 | 0.2 |
| 11518 | Edding Point, Edding Creek, Morgan River | 32°27'N/80°32'W | 7.0 | 6.6 | 0.2 |
| 11518 | Beaufort, Beaufort River | 32°26'N/80°41'W | 8.0 | 7.6 | 0.2 |
| 11518 | Harbor River Bridge, St. Helena Sound | 32°24'N/80°27'W | 6.7 | 6.3 | 0.2 |
| 11518 | Parris Island, MCRD, Beaufort River | 32°21'N/80°40'W | 7.6 | 7.2 | 0.2 |
| 11485 | St. Augustine, City Dock, Matanzas River | 29°54'N/81°19'W | 5.0 | 4.7 | 0.2 |
| 11485 | Vilano Beach, inside, Tolomato River | 29°55'N/81°18'W | 5.0 | 4.7 | 0.2 |
| 11485 | St. Augustine Beach | 29°51'N/81°16'W | 5.2 | 4.8 | 0.2 |
| 11485 | Smith Creek, Flagler Beach | 29°29'N/81°08'W | 1.1 | 0.9 | 0.1 |
| 11485 | Ormond Beach, Halifax River | 29°17'N/81°03'W | 0.8 | 0.7 | 0.1 |
| 11485 | Daytona Beach Shores, Sunglow Pier | 29°09'N/80°58'W | 4.4 | 4.1 | 0.2 |
| 11478 | Port Canaveral entrance | 28°25'N/80°36'W | 4.2 | 3.8 | 0.2 |
| 11485 | Halifax River, Ponce Inlet | 29°05'N/80°56'W | 3.2 | 2.9 | 0.1 |
| 11485 | Ponce de Leon Inlet (south) | 29°04'N/80°55'W | 3.2 | 2.9 | 0.1 |
| 11485 | Fort Matanzas, Matanzas River (ICWW) | 29°43'N/81°14'W | 4.3 | 4.0 | 0.2 |
| 11478 | Cape Canaveral (Canaveral Harbor) | 28°26'N/80°34'W | 3.8 | 3.7 | 0.2 |
| 11467 | Palm Beach, Lake Worth | 26°44'N/80°03'W | 3.1 | 2.9 | 0.2 |
| 11467 | Palm Beach, Hwy. 704 bridge, Lake Worth | 26°42'N/80°03'W | 2.9 | 2.7 | 0.1 |
| 11467 | West Palm Beach, Canal, Lake Worth | 26°39'N/80°03'W | 2.8 | 2.6 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011

| TIDAL INFORMATION (continued) | | | | | |
|---|---|---|---|---|---|
| Chart | Station | LAT/LONG | Mean Higher High Water* | Mean High Water* | Mean Low Water* |
| 11467 | Lake Worth Pier, ocean | 26°37'N/80°02'W | 3.0 | 2.9 | 0.1 |
| 11467 | Boynton Beach, Lake Worth | 26°33'N/80°03'W | 2.8 | 2.6 | 0.1 |
| 11467 | Delray Beach, ICWW | 26°28'N/80°04'W | 2.8 | 2.6 | 0.2 |
| 11467 | South Delray Beach, ICWW | 26°27'N/80°04'W | 2.7 | 2.6 | 0.2 |
| 11467 | Yamato, ICWW | 26°24'N/80°04'W | 2.6 | 2.5 | 0.2 |
| 11467 | Lake Wyman, ICWW | 26°22'N/80°04'W | 2.5 | 2.5 | 0.2 |
| 11467 | Hillsboro Inlet (CG station) | 26°16'N/80°05'W | 2.8 | 2.6 | 0.2 |
| 11467 | Port Everglades, Turning Basin | 26°06'N/80°07'W | 2.8 | 2.7 | 0.2 |
| 11467 | Whiskey Creek, south entrance, ICWW | 26°03'N/80°07'W | 2.5 | 2.4 | 0.2 |
| 11467 | Dumfoundling Bay | 25°57'N/80°08'W | 2.2 | 2.2 | 0.1 |
| 11467 | North Miami Beach, Newport Fishing Pier | 25°56'N/80°07'W | 2.8 | 2.6 | 0.2 |
| 11467 | Haulover Pier, N. Miami Beach | 25°54'N/80°07'W | 2.7 | 2.6 | 0.1 |
| 11467 | Miami Miamarina, Biscayne Bay | 25°47'N/80°11'W | 2.4 | 2.3 | 0.1 |
| 11467 | Biscayne Creek, Intercoastal Waterway | 25°53N/80°10'W | 2.4 | 2.3 | 0.1 |
| 11467 | Lake Worth ICWW, Lake Worth | 26°37'N/80°03'W | 3.1 | 2.9 | 0.1 |
| 11465 | Miami Harbor entrance, ocean pier | 25°46'N/80°08'W | 2.7 | 2.6 | 0.2 |
| 11465 | Cutler, Biscayne Bay | 25°37'N/80°18'W | 2.1 | 2.1 | 0.1 |
| 11465 | Ragged Keys, Biscayne Bay | 25°32'N/80°10'W | 1.9 | 1.8 | 0.1 |
| 11465 | Elliott Key Harbor, Elliott Key | 25°27'N/80°12'W | 1.6 | 1.6 | 0.1 |
| 11463 | Turkey Point, Biscayne Bay | 25°26'N/80°20'W | 1.8 | 1.7 | 0.1 |
| 11463 | Christmas Point, Elliott Key | 25°24'N/80°14'W | 2.0 | 2.0 | 0.1 |
| 11463 | Totten Key, west side, Biscayne Bay | 25°23'N/80°15'W | 1.4 | 1.3 | 0.1 |
| 11463 | Pumpkin Key, south end, Card Sound | 25°20'N/80°18'W | 0.8 | 0.7 | 0.1 |
| 11463 | Ocean Reef Harbor, Key Largo | 25°19'N/80°17'W | 2.5 | 2.5 | 0.2 |
| 11464 | Garden Cove, Key Largo | 25°10'N/80°22'W | 2.4 | 2.3 | 0.2 |
| 11464 | Tavernier Harbor, Hawk Channel | 25°00'N/80°31'W | 2.4 | 2.2 | 0.2 |
| 11464 | Alligator Reef, Hawk Channel | 24°51'N/80°37'W | 2.2 | 2.1 | 0.2 |
| 11449 | Indian Key Anchorage, Lower Matecumbe Key | 24°52'N/80°42'W | 2.2 | 2.1 | 0.2 |
| 11448 | Bahia Honda Key, Bahia Honda Channel | 24°39'N/81°17'W | 1.5 | 1.3 | 0.1 |
| 11448 | No Name Key, east side, Bahia Honda Channel | 24°42'N/81°19'W | 1.2 | 0.9 | 0.2 |
| 11448 | Big Pine Key, Bogie Channel Bridge | 24°42'N/81°21'W | 1.2 | 1.0 | 0.2 |
| 11448 | Big Pine Key, Newfound Harbor Channel | 24°39'N/81°23'W | 1.5 | 1.3 | 0.1 |
| 11448 | Big Spanish Key | 24°47'N/81°25'W | 3.3 | 3.0 | 0.4 |
| 11448 | Howe Key, northwest end | 24°46'N/81°26'W | 2.8 | 2.6 | 0.3 |
| 11448 | Big Torch Key, Niles Channel | 24°42'N/81°26'W | 1.2 | 0.9 | 0.2 |
| 11448 | Summerland Key, Niles Channel south | 24°39'N/81°26'W | 1.6 | 1.3 | 0.2 |
| 11448 | Big Torch Key, Harbor Channel | 24°44'N/81°27'W | 2.8 | 2.5 | 0.3 |
| 11448 | Knockemdown Key, north end | 24°43'N/81°29'W | 2.4 | 2.1 | 0.3 |
| 11448 | Cudjoe Key, north end, Kemp Channel | 24°42'N/81°30'W | 2.7 | 2.5 | 0.3 |
| 11448 | Sugarloaf Key, north end, Bow Channel | 24°42'N/81°33'W | 2.3 | 2.0 | 0.2 |
| 11448 | Sawyer Key, outside, Cudjoe Channel | 24°46'N/81°34'W | 2.6 | 2.4 | 0.1 |
| 11442 | Boot Key Harbor bridge, Boot Key | 24°42'N/81°06'W | 2.0 | 1.8 | 0.2 |
| 11442 | Big Spanish Key | 24°47'N/81°25'W | 3.3 | 3.0 | 0.4 |
| 11447 | Key West, south side, White Street Pier | 24°33'N/81°47'W | 1.9 | 1.6 | 0.2 |

* Heights in feet referred to datum of sounding MLLW.
Real-time water levels, tide predictions, and tidal current predictions are available at:
http://tidesandcurrents.noaa.gov
To determine mean tide range subtract Mean Low Water from Mean High Water.
Data as of July 2011

# Appendix A

## Sales Information

(1) NOAA publications, nautical charts and unclassified National Geospatial-Intelligence Agency (NGA) nautical charts are sold by NOAA and its authorized sales agents in many U.S. ports and in some foreign ports through FAA/AeroNav Services. Mail orders should be addressed to:

(2) Federal Aviation Administration
(3) AeroNav Products
(4) Printing & Distribution Group, Distribution Team
(5) 10201 Good Luck Road
(6) Glenn Dale, MD 20760-9700.

(7) Mail orders must be accompanied by a check or money order (payable in U.S. funds) payable to FAA. Remittance from outside the United States should be made either by an International Money Order or by a check payable on a U.S. bank. Chart catalogs, which include a listing of authorized sales agents, are free upon request. Place orders online at http://faacharts.faa.gov. Orders may also be placed by phone (301-436-8301 or toll-free 800-638-8972), FAX (301-436-6829), or email (9-AMC-Chartsales@faa.gov).

## Charts, Publications, and Services-NOAA

### Reporting corrections to Nautical Charts and Coast Pilots

(8) Users are requested to report all significant discrepancies or additions to NOAA Coast Pilots, including depth information in privately maintained channels and basins; obstructions, wrecks, and other dangers; new, relocated, or demolished landmarks; uncharted fixed private aids to navigation; deletions or additions of small-craft facilities and any other information pertinent to safe navigation. This information may be submitted using the NOAA Office of Coast Survey website: http://nauticalcharts.noaa.gov/discrepancy. All correspondence should be addressed to:

(9) Department of Commerce, NOAA
(10) Nautical Data Branch
(11) N/CS261, Station 7331
(12) 1315 East-West Highway
(13) Silver Spring, MD 20910

### Nautical Charts

(14) United States Coastal and Intracoastal waters and possessions.

(15) Great Lakes, Lake Champlain, New York State Canals, and the St. Lawrence River-St. Regis to Cornwall, Canada.

(16) Catalogs of Charts and Publications:
(17) Catalog 1-Atlantic Coast
(18) Catalog 2-Pacific Coast
(19) Catalog 3-Alaska
(20) Catalog 4-Great Lakes
(21) Catalog 5-Gulf Coast

### Dates of Latest Editions

(22) Information concerning the dates of the latest editions for the full suite of NOAA's nautical charts and U.S. Coast Pilot volumes can be found at: www.nauticalcharts.noaa.gov/mcd/dole.htm.

### Chart validity

(23) **CAUTION: A NOAA nautical chart is not a valid document until its publication is announced in the NGA Weekly Notice to Mariners. This also applies to NOAA nautical publications such as Coast Pilot. The date of a chart** is also of vital importance to the navigator. When charted information becomes obsolete, further use of the chart for navigation may be dangerous.

### Coast Pilot

(24) U.S. Coast Pilot 1, Atlantic Coast, Eastport to Cape Cod.

(25) U.S. Coast Pilot 2, Atlantic Coast, Cape Cod to Sandy Hook.

(26) U.S. Coast Pilot 3, Atlantic Coast, Sandy Hook to Cape Henry.

(27) U.S. Coast Pilot 4, Atlantic Coast, Cape Henry to Key West.

(28) U.S. Coast Pilot 5, Atlantic Coast-Gulf of Mexico, Puerto Rico, and Virgin Islands.

(29) U.S. Coast Pilot 6, Great Lakes, Lakes Ontario, Erie, Huron, Michigan and Superior and St. Lawrence River.

(30) U.S. Coast Pilot 7, Pacific Coast, California, Oregon, Washington, and Hawaii.

(31) U.S. Coast Pilot 8, Pacific Coast Alaska, Dixon Entrance to Cape Spencer.

(32) U.S. Coast Pilot 9, Pacific and Arctic Coasts, Alaska-Cape Spencer to Beaufort Sea.

### Distance Tables

(33) Distances Between United States Ports (available at http://nauticalcharts.noaa.gov/nsd/distances-ports).

**Tide Tables**

(34) East Coast of North and South America, including Greenland.

(35) West Coast of North and South America, including Hawaii

(36) Central and Western Pacific and Indian Oceans

(37) Europe and West Coast of Africa, including the Mediterranean Sea

**Tidal Current Tables**

(38) Atlantic Coast of North America.

(39) Pacific Coast of North America and Asia

**Regional Tide and Tidal Current Table**

(40) New York to Chesapeake Bay.

**National Ocean Service Center for Operational Oceanographic Products and Services**

**For Tide and Tidal Current Observations and Predictions, PORTS® data, Tidal Datums, Levels and Bench Mark Sheets:**

(41) Oceanographic Division (N/OPS3)

(42) 1305 East-West Highway, 7th Floor

(43) Silver Spring, MD 20912-3281

(44) Tel: 301-713-2815 Ext. 0

(45) Fax: 301-713-4500 (24 hours)

(46) Email: tide.predictions@noaa.gov

(47) Web: http://www.tidesandcurrents.noaa.gov

**National Weather Service Offices**

(48) The following offices will provide forecasts and climatological data or arrange to obtain these services from other offices. They will also check barometers in their offices or by telephone; refer to the local telephone directory for numbers.

(49) Newport/Morehead City, NC: 533 Roberts Road, Newport, NC 28570.

(50) Wilmington, NC: 2015 Gardner Drive 28405.

(51) Charleston, SC: 5777 South Aviation Avenue 29406.

(52) Jacksonville, FL; 13701 Fang Drive 32218.

(53) Miami, FL 11691 SW 17th Street 33165

(54) Melbourne, FL; 421 Croton Road 32935.

(55) Key West, FL; 3535 S. Roosevelt Boulevard 33040.

**Marine Weather Services Charts**

(56) Published by the National Weather Service (available at http://www.weather.gov/om/marine/pub-htm).

**NOAA Weather Radio**

(57) National Weather Service VHF-FM radio stations provide mariners with continuous FM broadcasts of weather warnings, forecasts, radar reports, and surface weather observations. Reception range is up to 40 miles from the antenna site, depending on the terrain, type of receive, and antenna used. The following VHF-FM radio stations with location of antenna are in or near the area covered by this Coast Pilot:

(58) KHB-37, Norfolk, Va., 162.55 MHz (36°48'N., 76°28'W.)

(59) KIG-77, Cape Hatteras, N.C., 162.475 (35°16'N., 75°33'W.)

(60) WWH-26 Mamie, N.C., 162.425 MHz (36°07'N., 75°49'W.)

(61) WNG-537 Windsor, N.C., 162.525 MHz (36°04'N., 76°57'W.)

(62) KEC-84 New Bern, N.C., 162.40 MHz (35°08'N., 77°03'W.)

(63) KHB-31 Wilmington, N.C., 162.55 MHz (34°08'N., 78°11'W.)

(64) KEC-95, Myrtle, S.C., 162.40 MHz (33°57'N., 79°06'W.)

(65) WNG-628, Georgetown, S.C., 162.500 MHz (33°21'N., 79°17'W.)

(66) KHB-29, Charleston, S.C., 162.55 MHz (32°47'N., 79°50'W.)

(67) WXJ-23, Beaufort, S.C., 162.450 MHz (32°42'N., 80°40'W.)

(68) KEC-85, Savannah, Ga., 162.40 MHz (32°04'N., 81°06'W.)

(69) WWH-39 Brunswick, Ga., 162.425 MHz (31°09'N., 81°28'W.)

(70) KHB-39, Jacksonville, Fla., 162.55 MHz (30°19'N., 81°32'W.)

(71) WNG-522, Palatka, Fla., 162.425 MHz (29°38'N., 81°37'W.)

(72) KIH-26, Daytona Beach, Fla., 162.40 MHz (29°12'N., 81°00'W.)

(73) WXJ-70, Melbourne, Fla., 162.55 MHz (28°04'N., 80°36'W.)

(74) WWF-69, Fort Pierce, Fla. 162.425 MHz (27°30'N., 80°20'W.)

(75) KEC-50, West Palm Beach, Fla., 162.475 MHz (26°35'N., 80°12'W.)

(76) WXK-83, Fort Myers, Fla., 162.475 MHz (26°37'N., 81°48'W.)

(77) KHB-34, Miami, Fla., 162.55 MHz (25°32'N., 80°28'W.)

(78) WWG-80, Teatable Key, Fla., 162.45 MHz (24°53'N., 80°39'W.)

(79) WXJ-95, Key West, Fla., 162.40 MHz (24°39'N., 81°32'W.)

(80) The National Weather Service provides **Radio Facsimile Weather Information** for east coast waters through the Coast Guard Communication Station Boston (NMF). Broadcasts are made on the following frequencies: 4235 (02z, 08z), 6340.5, 9100, 12750 (14z) kHz. For carrier frequency, subtract 1.9 kHz. Fax schedules are transmitted at 0243 and 1405 GMT, and provide area coverage and descriptions of services. For further information, go to http://www.nws.noaa.gov/om/marine/radiofax.htm.

### Marine Weather Forecasts

(81) Scheduled coastal marine forecasts are issued four times daily by National Weather Service Offices. For further information on coastal marine forecasts as well as additional types of forecasts, go to http://www.nws.noaa.gov/om/marine/forecast.htm.

### Space Environment Center (SEC)

(82) The space Environment Center disseminates space weather alerts and forecasts (information concerning solar activity, radio propagation, etc.).

(83) For general information write or call:

(84) NOAA, National Weather Service

(85) National Center for Environment Prediction

(86) Space Environment Center, W/NP9

(87) 325 Broadway

(88) Boulder, CO 80305

(89) Telephone: 303-497-3171

(90) Website: http://www.sec/noaa.gov/

## Charts and Publications–Other U.S. Government Agencies

(91) A partial list of publications and charts considered of navigational value is included for ready reference of the mariner. In addition to the agents located in the principal seaports handling publication sales, certain libraries have been designated by the Congress of the United States to receive the publications as issued for public review.

### Government Printing Office

(92) Publications of the U.S. Government Printing Office may be ordered at http://bookstore.gpo.gov. Orders may also be placed by phone (866-512-1800; 202-512-1800 in the DC area), FAX (202-512-2104), or mail (U.S. Government Printing Office, P.O. Box 979050, St. Louis, MO 63197-9000).

### National Geospatial-Intelligence Agency Procurement Information

(93) Unclassified publications produced by the National Geospatial-Intelligence Agency (NGA) are available from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-1954. Orders can be placed on the U.S. Government Online Bookstore (http://bookstore.gpo.gov), by phone (202-512-1800) or by FAX (202-512-2250). Classified NGA publications and charts are available to authorized users from the Defense Supply Center Richmond (Attn: JNAA), 8000 Jefferson Davis Highway, Richmond, VA 23297-5336, Defense Supply Center Richmond, Customer Assistance Office may be contacted at 800-826-0342.

### Nautical Charts

(94) U.S. Waters:

(95) Apalachicola, Chattahoochee and Flint Rivers Navigation Charts, Alabama River Charts, and Black Warrior-Tombigbee Rivers River Charts: Published and for sale by U.S. Army Engineer District Mobile, P.O. Box 2288, Mobile, AL 36602, Attn: Map Sales, LM-SR; telephone, 251-441-5631.

(96) Flood Control and Navigation Maps of the Mississippi River, Cairo, IL to the Gulf of Mexico: Published by Mississippi River Commission and for sale by U.S. Army Engineer District Vicksburg, 4155 Clay Street, Vicksburg, MS 39183-3435, Attn: Map Sales; telephone: 601-631-5042.

(97) Upper Mississippi River Navigation Charts (Mississippi River, Cairo, IL to Minneapolis, MN): Published and for sale by U.S. Army Engineer District Rock Island, Clock Tower Bldg., P.O. Box 2004, Rock Island, IL 61204-2004; telephone, 309-794-5338.

(98) Charts of the Illinois Waterway, from Mississippi River at Grafton, IL to Lake Michigan at Chicago and Calumet Harbors: Published and for sale by U.S. Army Engineer District Rock Island, Clock Tower Bldg., P.O. Box 2004, Rock Island, IL 61204-2004; telephone, 309-794-5338.

(99) **Foreign Waters:** Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above.)

### Publications

(100) **Notices to Mariners:** Local Notices to Mariners are posted weekly by the U.S. Coast Guard Navigation Center at http://www.navcen.uscg.gov/. The National Geospatial-Intelligence Agency, U.S. Notice to Mariners are available at http://msi.nga.mil/NGAPortal/MSI.portal.

(101) **Special Notice to Mariners** are published annually in National Geospatial-Intelligence Agency Notice to Mariners 1. These notices contain important information of considerable interest to all mariners. Interested parties are advised to read these notices.

(102) **Light Lists (United States and Possessions):** Published by U.S. Coast Guard; for sale by the Government Printing Office. (See Government Printing Office, early this appendix.)

(103) **List of Lights (Foreign Countries):** Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above.)

(104) **Sailing Directions (Foreign Countries):** Published by National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above.)

(105) **Radio Navigational Aids, Pub. 117:** Published by National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above.)

(106) The **Nautical Almanac**, the **Air Almanac**, and **Astronomical Almanac**: Published by U.S. Naval Observatory; for sale by Government Printing Office. (see Government Printing Office, early this appendix.)

(107) **American Practical Navigator (Bowditch)** (Pub. 9): Published by National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above.)

(108) **International Code of Signals** (Pub. 102): Published by National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above.)

(109) **Marine** Product Dissemination Information: maintained by the National Weather Service; http://www.nws.noaa.gov/om/marine/home.htm.

(110) **Navigation Rules**: Navigation Rules, International-Inland (COMDTINST M16672.2 series): Published by the U.S. Coast Guard; for sale by Government Printing Office. (See Government Printing Office, early this appendix.)

(111) **Federal Requirements for Recreational Boats:** Published by U.S. Coast Guard; http://www.uscgboating.org.

(112) **Port Series of the United States:** Published and sold by U.S. Army Corps of Engineers, Institute for Water Resources, Navigation Data Center (CEIWR-NDC-N), 7701 Telegraph Road, Casey Building, Alexandria, VA 22315-3868; telephone 703-428-8059.

## Offices and Services-Other U.S. Government Agencies

### Offices and Services-Other U.S. Government Agencies

#### U.S. Army Corps of Engineers (USACE) Offices

(113) **Norfolk District:** 803 Front Street, Norfolk, VA 23510-1096. Coastal and tributary waters of Virginia, including the Chesapeake Bay and its tributaries south of Pocomoke River on the eastern shore and south of Smith Point, VA, on the western shore except for Little Wicomico River, VA Chowan River Basin downstream to and including the mouth of Meherrin River. The Albermarle and Chesapeake Canal within the State of Virginia and the Great Dismal Swamp Canal to Albemarle Sound.

(114) **Wilmington District**: 69 Darlington Avenue, Wilmington, NC 28403-1343. Coastal and tributary waters of North Carolina except for Chowan River Basin above the mouth of Meherrin River and the navigation project in Pasquotank River. The Atlantic Intracoastal Waterway within North Carolina to Little River, SC, except the Great Dismal Swamp Canal north of Albemarle Sound, which is within the Norfolk District.

(115) **Charleston District:** Federal Building, 334 Meeting Street, Charleston, SC 29402-0919. Coastal and tributary waters of South Carolina. The Atlantic Intracoastal Waterway within South Carolina from Little River to, and including, Port Royal Sound.

(116) **Savannah District:** Juliette Gordon Low Building, 100 West Oglethorpe Avenue, Savannah, GA. Coastal and tributary waters of Georgia from Port Royal Sound, SC to Cumberland Sound, FL, and the Atlantic Intracoastal Waterway between the same points.

(117) **Jacksonville District:** Federal Building, 400 West Bay Street, Jacksonville, FL 32202. Coastal and tributary waters of Florida from Fernandina to the Aucilla River in Apalachee Bay and the waters of Puerto Rico and the Virgin Islands. The Atlantic Intracoastal Waterway between Fernandina and Key West and the Gulf Intracoastal Waterway between Key West and St. Marks.

#### Environmental Protection Agency (EPA)

(118) Regional offices and States in the EPA coastal regions:

(119) **Region I** (New Hampshire, Vermont, Maine, Massachusetts, Connecticut, Rhode Island): J.F. Kennedy Federal Bldg., Boston, MA 02203.

(120) **Region II** (New Jersey, New York, Puerto Rico, Virgin Islands): 26 Federal Plaza, New York, NY 10278.

(121) **Region III** (Delaware, Maryland, Virginia, District of Columbia, Pennsylvania): 841 Chestnut Street, Philadelphia, PA 19107.

(122) **Region IV** (Alabama, Florida, Georgia, Mississippi, South Carolina, North Carolina): 345 Courtland Street, NE., Atlanta, GA 30365.

(123) **Region V** (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin): 230 South Dearborn Street, Chicago, IL 60604.

(124) **Region VI** (Louisiana, Texas): 1445 Ross Avenue, Dallas, TX 75270.

(125) **Region IX** (California, Hawaii, Guam): 215 Fremont Street, San Francisco, CA 94105.

(126) **Region X** (Alaska, Oregon, Washington): 1200 Sixth Avenue, Seattle, WA 98101.

#### U.S. Coast Guard Navigation Center (NAVCEN)

(127) The Coast Guard Navigation Center provides cutting edge services for safe, secure, and efficient maritime transportation. The center operates the Navigation Information Service (NIS), the Maritime Differential GPS (DGPS) and the developing Nationwide Differential Global Positioning System (NDGPS). In addition, NAVCEN serves as the civilian interface for the Global Positioning System and manages other navigation-related projects.

(128) For further information and/or operational questions regarding GPS and DGPS, visit:

(129) http://www.navcen.uscg.gov or contact

(130) NAVCEN MS 7310

(131) 7323 Telegraph Road

(132) Alexandria, VA 20598-7310

#### Coast Guard District Offices

(133) Commander, Fifth Coast Guard District, Federal Building, 431 Crawford Street, Portsmouth, VA 23704-5004. Delaware; Maryland; Virginia; District of

Columbia; North Carolina: that portion of New Jersey south of latitude 39°57'N., west of longitude 74°27'W., and southwest of a line extending northwesterly from 39°57'N., 74°27'W., to the New York, New Jersey, and Pennsylvania boundaries at Tristate; that portion of Pennsylvania east of a line drawn along 78°55'W., south to 41°00'N., thence west to 70°00'W. and thence south to the Pennsylvania-Maryland boundary; the ocean area encompassed by a line bearing 122°T from the New Jersey shoreline at 39°57'N., (in the vicinity of the mouth of Toms River, New Jersey) to 36°43'N., 67°30'W.; thence along a line bearing 219°T to the point of intersection with a line bearing 122°T from the shoreline at the North Carolina-South Carolina border; thence northwesterly along this line to the coast.

(134) Commander, Seventh Coast Guard District, Brickell Plaza Federal Building, 909 SE First Avenue, Miami, FL 33131-3050. Coastal waters and tributaries of South Carolina, Georgia, Florida eastward of longitude 83°50'W., Puerto Rico, U.S. Virgin Islands, and the adjacent islands of the United States.

(135) **Note:** A Sector Office combines the functions of the Captain of the Port and Marine Inspection Office.

### Coast Guard Sector Offices

(136) Charleston, SC: 196 Tradd Street, 29401-1817.

(137) Hampton Roads, Portsmouth, VA: 4000 Coast Guard Boulevard, 23703-2199.

(138) Jacksonville, Atlantic Beach, FL: 4200 Ocean Street, 32233-2416.

(139) Key West, FL: 100 Trumbo Road, 33040-0005

(140) Miami, Miami Beach, FL: 100 MacArthur Causeway, Rm. 201, 33139-5101.

(141) North Carolina, Wilmington, NC: 721 Medical Center Drive, 28401-7574.

### Coast Guard Sector Field Offices

(142) Cape Hatteras, Nags Head, NC: 114 West Wood Hill Drive, 27959-9394.

(143) Fort Macon, Atlantic Beach NC: 2301 East Fort Macon Road, 28512-5633.

### Coast Guard Marine Safety Units/Detachments

(144) Fort Macon, Atlantic Beach, NC: 2301 East Fort Macon Road, 28512-5633.

(145) Lake Worth, Riviera Beach, FL: 3300 Lakeshore Drive, 33404.

(146) Port Canaveral, Cape Canaveral FL: 935 Grouper Road, 32920-4402.

(147) Savannah, GA: Juliette Gordon Low Federal Building, 100 W. Oglethorpe Ave., Suite 1017, 31401-3604.

### Coast Guard Stations

(148) The stations listed are in the area covered by this Coast Pilot. They have search and rescue capabilities and may provide lookout, communication, and/or patrol functions to assist vessels in distress. The National VHF-FM Distress System provides continuous coastal radio coverage outwards to 20 miles on channel 16. After contact on channel 16, communications with the Coast Guard should be on channel 22A. If channel 22A is not available to the mariner, communications may be made on channel 12. Selected stations guard the International Radiotelephone Distress, Safety and Calling Frequencies.

(149) **Virginia:**

(150) Portsmouth Station (36°53.0'N., 76°21.2'W.). On the west side of the entrance to Craney Island Creek.

(151) **North Carolina:**

(152) Elizabeth City Air Station (36°15.8'N., 76°10.5'W.). About 3.5 miles southeastward of Elizabeth City, NC, on the south bank of Pasquotank River.

(153) Oregon Inlet Station (35°47.8'N., 75°33.0'W.). Southerly end of Bodie Island.

(154) Hatteras Inlet Station (35°12.5'N., 75°42.4'W.). Southern end of Hatteras Island, 1 mile southwestward of town of Hatteras.

(155) Ocracoke Station (35°06.9'N., 75°59.1'W.). At Ocracoke, about 0.4 mile northward of Ocracoke Light.

(156) Hobucken Station (35°14.8'N.,76°35.6'W.). On the Intracoastal Waterway at Mile 157.1 just north of the Hobucken Bridge.

(157) Fort Macon Base (34°41.8'N., 76°40.9'W.). About 0.1 mile westward of Fort Macon.

(158) Swansboro Station (34°38.8'N., 77°05.8'W.). About 1 mile east of Bogue Inlet, on West end of Bogue Banks.

(159) Wrightsville Beach Station (34°11.3'N., 77°48.7'W.). Southwestern end of Wrightsville Beach at Masonboro Inlet.

(160) Oak Island Station (33°53.6'N., 78°02.1'W.). West side of mouth of Cape Fear River on Oak Island.

(161) **South Carolina:**

(162) Georgetown Station (33°21.8'N., 79°16.2'W.). West bank at the Great Pee Dee River about 0.25 mile south of U.S. Route 17 highway bridge.

(163) Charleston Base (32°46.4'N., 79°56.6'W.). East side of Ashley River 0.8 mile above the Battery.

(164) **Georgia:**

(165) Brunswick Station (31°07.3'N., 81°28.6"W.). South side of Plantation Creek entrance.

(166) Tybee Station (32°02.1'N., 80°54.4'W.). North side of Cockspur Island.

(167) Savannah Air Station (34°01.0'N., 81°09.0'W.). At Hunter Air Force Base.

(168) **Florida:**

(169) Mayport Base (30°23.3'N., 81°26.1'W.). On the east side of St. Johns River at the southerly end of waterfront at Mayport.

(170) Ponce de Leon Inlet Station (29°03.9' N., 80°54.9'W.). At south side of entrance to the inlet.

(171) Port Canaveral Station (28°25.0'N., 80°37.3'W.). North side of Canaveral Barge Canal at the northeast corner of West Basin.

(172) Fort Pierce Station (27°27.8'N., 80°18.4'W.). South side of Fort Pierce Inlet, 1.2 miles west of the outer end of south jetty.

(173) Lake Worth Inlet Station (26°47'19"N., 80°03'04"W.). About one mile north of the entrance channel on the west side of the Intracoastal Waterway.

(174) Fort Lauderdale Station (26°05.3'N., 80°06.8'W.). On the east side of the Intracoastal Waterway at Mile 1066.8.

(175) Miami Air Station (25°52.8'N., 80°15.2'W.). At Opa Locka Airport, northwest part of Miami.

(176) Miami Beach Base (25°46.2'N., 80°08.7'W.). On the north side of Miami Harbor Channel, 1.2 miles northwestward from outer end of north jetty.

(177) Islamorada Station (24°57.2'N., 80°35.2'W.). At the southwestern end of Plantation Key.

(178) Marathon Station (24°42.6'N., 81°06.4'W.). On the north side of Vaca Key, 1.1 miles eastward of Knight Key Channel.

(179) Key West Station (24°33.9'N., 81°48.0'W.). At Pier D2, Trumbo Street.

### Coast Guard Radio Broadcasts

(180) Urgent. safety, and scheduled marine information broadcasts are made by Coast Guard radio stations. In general, these broadcasts provide information vital to vessels operating in the approaches and coastal waters of the United States including Puerto Rico and the U.S. Virgin Islands. Transmissions are as follows:

(181) **By radiotelephone**: (a) upon receipt; (b) repeated 15 minutes later, (for urgent messages only); (c) text only on the first scheduled broadcast unless canceled; (d) additional broadcasts at the discretion of the originator.

(182) **Urgent broadcasts** are preceded by the urgent signal PAN PAN. Both the urgent signal and message are transmitted on 2182 kHz, and VHF-FM channel 16.

(183) **Safety broadcasts** are preceded by the safety signal SECURITY. After the preliminary safety signal is broadcast on 2182 kHz and VHF-FM channel 16, broadcast stations will shift to 2670 kHz and VHF-FM channel 22A, respectively.

### Coast Guard Radio Broadcast Schedules

(184) Up-to-date U.S. Coast Guard radio broadcast schedules may be found at http://www.nws.noaa.gov/om/marine/home/htm.

### Radio Weather Broadcasts

(185) Taped or direct broadcasts of marine weather forecasts and storm warnings are made by commercial and Coast Guard radio stations in the areas covered by this Coast Pilot. The Coast Guard broadcasts coastal and offshore marine weather forecasts at the times and frequencies indicated:

(186) **NMN**, Portsmouth, VA

(187) 4426.0 kHz, 0030, 0500, and 2300 e.s.t.

(188) 6501.0 kHz, 0030, 0500, 0630, 1100, 1700, 1830, and 2300 e.s.t.

(189) 8764.0 kHz, 0030, 0500, 0630, 1100, 1230, 1700, 1830, and 2300 e.s.t.

(190) 13089.0 kHz, 0630, 1100, 1230, 1700, and 1830 e.s.t.

(191) 17314.0 kHz, 1230 e.s.t.

### Coast Guard Maritime Safety Line

(192) For current local waterway information, port openings, closures, and restrictions from the Mississippi River to the Atlantic Ocean, telephone 1-800-682-1796; Puerto Rico, telephone 787-706-2416.

### U.S. NAVTEX Transmitting Stations

(193) NAVTEX coverage is reasonably continuous to 200 NM off the U.S. East, Gulf, and West Coasts; Puerto Rico; Southwest Alaska; Hawaii; and 100 NM off Guam. U.S. Coast Guard NAVTEX broadcast stations (Atlantic Ocean) and message content follow:

| STATION | ID | BROADCAST SCHEDULE (UTC) |
|---|---|---|
| Boston (NMF) | F | 0045, 0445, 0845, 1245, 1645, 2045 |
| Chesapeake (NMN) | N | 0130, 0530, 0930, 1330, 1730, 2130 |
| Charleston (NMN) | E | 0040, 0440, 0840, 1240, 1640, 2040 |
| Miami (NMA) | A | 0000, 0400, 0800, 1200, 1600, 2000 |
| San Juan (NMR) | R | 0200, 0600, 1000, 1400, 1800, 2200 |
| New Orleans (NMG) | G | 0300, 0700, 1100, 1500, 1900, 2300 |

(194) **Boston (NMF)(Station F)**

(195) First Coast Guard District Broadcast Notices to Mariners.

(196) Distress Urgent, and Safety messages.

(197) International Ice Patrol Reports (in season).

(198) Gale, storm, and hurricane warnings.

(199) Offshore marine weather forecasts for:

(200) New England continental shelf to 1000 fathoms;

(201) Gulf of Maine;

(202) Georges Bank;

(203) South of New England;

(204) South of Nova Scotia.

(205) Broadcast times: 0045, 0445, 0845, 1245, 1645, 2045 GMT.

(206) **Chesapeake (NMN)(Station N)**

(207) Fifth Coast Guard District Broadcast Notices to Mariners.

(208) Distress, Urgent, and Safety messages.

(209) Gale, storm, and hurricane warnings.

(210) Offshore marine weather forecasts for the west central North Atlantic from 32°N to 40°N and west of 65°W including the continental shelf to 1000 fathoms.

(211) Broadcast times: 0130, 0530, 0930, 1330, 1730, 2130 GMT.

(212) **Charleston (NMN) (Station E)**

(213) Seventh Coast Guard District Broadcast Notices to Mariners.

(214) Distress, Urgent and Safety Messages.

(215) Gale, storm and hurricane warnings.

(216) Offshore Marine Weather Forecast from Murrells Inlet, SC to Flagler Beach, FL.

(217) Broadcasts times: 0040, 0440, 0840, 1240, 1640, 2040 UTC.

(218) **Miami (NMA)(Station A)**

(219) Seventh Coast Guard District Broadcast Notices to Mariners.
(220) Distress, Urgent, and Safety messages.
(221) Gale, storm, and hurricane warnings.
(222) Offshore marine weather forecasts for the southwest North Atlantic south of 32°N and west of 65°W.
(223) Broadcast times: 0000, 0400, 0800, 1200, 1600, 2000 GMT.
(224) **San Juan (NMR)(Station R)**
(225) Seventh Coast Guard District Broadcast Notices to Mariners.
(226) Distress, Urgent, and Safety messages.
(227) Gale, storm, and hurricane warnings.
(228) Offshore marine weather forecast for:
(229) Puerto Rico and Virgin Islands waters out 20 NM;
(230) Eastern Caribbean Sea east of 75°W.
(231) Broadcast times: 0300, 0700, 1100, 1500, 1900, 2300 GMT.
(232) **New Orleans (NMG)(Station G)**
(233) Eighth Coast Guard District Broadcast Notices to Mariners.
(234) Distress, Urgent, and Safety messages.
(235) Gale, storm, and hurricane warnings.
(236) Offshore marine weather forecast for the Gulf of Mexico
(237) Broadcast times: 0300, 0900, 1500, 2100 GMT.
(238) **Customs Ports of Entry and Stations**
(239) Vessels may be entered and cleared at any port of entry or customs station, but at the latter only with advance authorization from the Customs Service district director.
(240) **Southeast Region**
(241) Norfolk District:
(242) Ports of Entry: Norfolk and Newport News, VA
(243) Wilmington District:
(244) Ports of Entry: Wilmington and Beaufort-Morehead City, NC
(245) Charleston District:
(246) Ports of Entry: Charleston and Georgetown, SC
(247) Savannah District:
(248) Ports of Entry: Savannah and Brunswick, GA
(249) Tampa District:
(250) Ports of Entry: Fernandina Beach, Jacksonville, and Port Canaveral, FL
(251) Customs Station: Green Cove Springs, FL (supervised by Jacksonville port of entry.)
(252) Miami District:
(253) Ports of Entry: Miami, Key West, Port Everglades, and West Palm Beach, FL
(254) Customs Station: Fort Pierce, FL (supervised by West Palm Beach port of entry).

### Public Health Service Quarantine Stations

(255) Stations where quarantine examinations are performed:
(256) Miami: U.S. Quarantine Station, International Airport, Miami, FL 33159-2335.
(257) At other ports, quarantine and/or medical examinations are usually performed by Public Health Service contract personnel or by quarantine inspectors from the nearest quarantine station. Inquiries concerning quarantine matters should be directed to the nearest quarantine station.

### Food and Drug Administration (FDA) Regional Offices

(258) **Northeast Region** (New York, Maine, Connecticut, New Hampshire, Vermont, Rhode Island): 830 Third Avenue, Brooklyn, NY 11232.
(259) **Mid-Atlantic Region** (Delaware, Pennsylvania, Virginia, Maryland, Ohio, New Jersey): U.S. Customhouse, 2nd and Chestnut Streets, Philadelphia, PA 19106.
(260) **Southeast Region** (South Carolina, North Carolina, Georgia, Alabama, Louisiana, Mississippi, Florida, Puerto Rico): 60 Eighth Street, N.E., Atlanta, GA 30309.
(261) **Midwest Region** (Illinois, Indiana, Michigan, Wisconsin): 20 N. Michigan Avenue, Chicago, IL 60602.
(262) **Southwest Region** (Texas): 3032 Bryan Street, Dallas, TX 75204.
(263) **Pacific Region** (California, Hawaii, Alaska, Washington, Oregon): 50 U.N. Plaza, San Francisco, CA 94102.

### Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) Offices

(264) Listed below are ports covered by this volume where APHIS inspectors are available to inspect plants, and plant and animal products, and locations of Animal Import Centers where livestock and birds are inspected.
(265) Information on importation of plants, animals, and plant and animal products is available from APHIS, Department of Agriculture, 4700 River Road, Riverdale, MD 20737.
(266) Telephone: 301-734-0841 (plant related); 301-734-7833 (animal related)
(267) Visit http://www.aphis.usda.gov for more information.
(268) **Virginia:**
(269) Norfolk: Federal Bldg., Room 311, 200 Granby Mall 23510.
(270) Newport News: P.O. Box 942, 23607.
(271) **North Carolina:**
(272) Morehead City: North Carolina Maritime Bldg., Room 216, 113 Arendell 28557.
(273) Wilmington: Rural Route 6, Box 53D, 28405.
(274) **South Carolina:**
(275) Charleston: 513 Federal Bldg., P.O. Box 941, 29402.
(276) **Georgia:**
(277) Atlanta: 650 Central Avenue, Hapeville 30354.
(278) Savannah: U.S. Courthouse and Federal Bldg., 125-126 Bull Street 31401.
(279) **Florida:**
(280) Jacksonville: Federal Office Bldg., Room 521, 400 West Bay Street 32202.
(281) Cape Canaveral: 120 George King Boulevard 32920.

(282) West Palm Beach: 158 Port Road, Riviera Beach 33404.

(283) Port Everglades: Amman Bldg., Room 305, 611 Eisenhower Boulevard 33316.

(284) Miami: FAA and NWS Bldg., Box 59-2647 AMF, 33159; Miami Inspection Station, 3500 N.W. 62nd Avenue 33159.

(285) Key West: Federal Bldg., Room 226, 301 Simonton Street 33040.

(286) Pensacola: Federal Building, 100 North Palafax Street 32573.

(287) Tampa: 700 Twiggs Street 33601.

(288) **Animal Import Centers:**

(289) Honolulu, Hawaii: 300 Ala Moana Boulevard, 96850.

(290) Miami, FL: 8120 NW 53rd Street, Suite 102, 33166.

(291) Rock Tavern, N.Y.: New York Animal Import Center, Stewart Airport, Rural Route 1, Box 74, 12575.

### Immigration and Naturalization Service Offices

(292) **Virginia:**

(293) Norfolk: Norfolk Federal Bldg., Room 439, 200 Granby Mall 23510.

(294) **North Carolina:**

(295) Wilmington: Post Office Bldg., Room 221, P.O. Box 1743, 28402.

(296) **South Carolina:**

(297) Charleston: Federal Bldg., Room 330, 334 Meeting Street 29403.

(298) **Georgia:**

(299) Savannah: Federal Bldg./Courthouse, Room 230, P.O. Box 9269, 31402.

(300) **Florida:**

(301) Jacksonville: Post Office Bldg., Room 227, 311 West Monroe Street, P.O. Box 4608, 32201.

(302) West Palm Beach: Customs Immigration Bldg., 141 East Port Road, Riviera Beach, P.O. Box 9846, 33404.

(303) Port Everglades: Amman Bldg., Room 304, 611 Eisenhower Boulevard, P.O. Box 13054, 33316.

(304) Miami: 7880 Biscayne Boulevard 33138.

(305) Key West: 301 Simonton Street, Room 215, Box 86, 33040.

### Federal Communications Commission Offices

(306) **District Field Offices:**

(307) Atlanta, GA: 3575 Koger Blvd., Ste. 320, Duluth, GA 30096-4958.

(308) Tampa, FL: 2203 N. Lois Ave., Room 1215, Tampa, FL 33607-2356.

(309) Telephone toll-free: 1-888-225-5322; (1-888-CALL-FCC) to report radio communictions interference issues.

### Radio shore stations providing medical advice

(310) Messages to shore stations may be transmitted in code groups or plain language; messages should be signed by the master and be prefixed **RADIOMEDICAL.** The following stations will provide radio services for medical advice. (See Medical advice, chapter 1.)

(311) NMN, Portsmouth, VA, U.S. Coast Guard and

(312) NMA, Miami, FL, U.S. Coast Guard on HF single-sideband radiotelephone channels 424(4134 kHz), 601(6200 kHz), 816(8240 kHz), or 1205(12242 kHz).

(313) WOE, Lantana, FL, RCA Global Communications, Inc. maintains continuous guard on 500 kHz.

### Measured Courses

(314) The positions of measured courses are shown on the chart and their description is included in the Coast Pilots when information is reported to the National Ocean Service. Courses are located in the following places covered by this Coast Pilot:

(315) Southward of the entrance to St. Johns River; 11490

(316) The pages in the text describing the courses can be obtained by referring to the index for the geographic places; chart numbers follow the names.

# Appendix B

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| NORFOLK, VA (36°54'N, 76°12'W) 43 feet (13.1 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1019.6 | 1018.9 | 1017.0 | 1016.1 | 1016.3 | 1015.8 | 1016.7 | 1017.1 | 1018.3 | 1019.2 | 1019.3 | 1020.2 | 1017.9 | 49 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 40.5 | 42.2 | 49.1 | 58.3 | 66.8 | 74.9 | 79.4 | 77.8 | 72.4 | 61.9 | 52.6 | 44.0 | 60.1 | 50 |
| Mean daily maximum | 48.4 | 50.7 | 58.0 | 68.0 | 75.8 | 83.6 | 87.5 | 85.5 | 80.0 | 70.1 | 61.3 | 52.2 | 68.5 | 50 |
| Mean daily minimum | 32.1 | 33.2 | 39.7 | 48.1 | 57.3 | 65.7 | 70.8 | 69.6 | 64.2 | 53.2 | 43.4 | 35.4 | 51.2 | 50 |
| Extreme (highest) | 78 | 82 | 88 | 97 | 100 | 101 | 103 | 104 | 99 | 95 | 86 | 80 | 104 | 50 |
| Extreme (lowest) | -3 | 8 | 18 | 28 | 36 | 45 | 54 | 49 | 45 | 27 | 20 | 7 | -3 | 50 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 70.6 | 64.1 | 45.0 | 35.8 | 37.6 | 33.3 | 41.6 | 46.3 | 58.2 | 66.8 | 68.3 | 76.5 | 53.7 | 50 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 26.4 | 27.5 | 26.6 | 26.3 | 20.9 | 18.2 | 16.3 | 16.9 | 21.9 | 29.6 | 29.8 | 28.7 | 24.1 | 48 |
| Percent of time scattered | 13.3 | 13.0 | 14.6 | 17.4 | 18.0 | 23.4 | 24.3 | 24.2 | 22.5 | 18.2 | 17.3 | 14.6 | 18.4 | 48 |
| Percent of time broken | 12.4 | 12.8 | 14.0 | 17.0 | 20.5 | 24.3 | 26.0 | 26.1 | 21.8 | 16.1 | 15.7 | 13.5 | 18.4 | 48 |
| Percent of time overcast | 44.6 | 43.3 | 41.3 | 35.4 | 35.5 | 28.7 | 27.1 | 27.2 | 28.6 | 32.1 | 33.2 | 39.2 | 34.7 | 48 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 3.6 | 3.2 | 3.8 | 3.0 | 3.6 | 3.5 | 5.2 | 5.2 | 3.8 | 3.3 | 3.0 | 3.1 | 44.8 | 50 |
| Greatest amount | 9.9 | 6.2 | 10.3 | 7.2 | 10.1 | 9.7 | 14.3 | 14.3 | 13.8 | 10.1 | 7.0 | 6.1 | 64.9 | 50 |
| Least amount | 1.0 | 0.8 | 0.7 | 0.4 | 0.6 | 0.3 | 0.3 | 0.7 | 0.2 | 0.5 | 0.4 | 0.6 | 26.4 | 50 |
| Maximum amount (24 hours) | 3.7 | 2.6 | 3.7 | 5.8 | 3.4 | 5.7 | 4.7 | 7.4 | 6.4 | 3.7 | 3.3 | 2.5 | 7.4 | 50 |
| Mean number of days | 15 | 14 | 15 | 14 | 14 | 13 | 14 | 14 | 11 | 11 | 12 | 13 | 160 | 50 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 2.9 | 3.1 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 8.0 | 48 |
| Greatest amount | 14.2 | 24.4 | 13.7 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 14.7 | 41.9 | 48 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 48 |
| Maximum amount (24 hours) | 9.0 | 13.6 | 8.1 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 10.4 | 13.6 | 48 |
| Mean number of days | 4.0 | 4.0 | 2.0 | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | 2.0 | 12.0 | 50 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.01 | 0.05 | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.02 | 0.04 | 0.07 | 0.02 | 0.01 | 0.02 | 50 |
| Mean wind speed (knots) | 9.9 | 10.3 | 10.7 | 10.2 | 9.1 | 8.4 | 7.8 | 7.6 | 8.3 | 8.9 | 9.2 | 9.5 | 9.1 | 50 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 11.5 | 11.2 | 8.6 | 6.7 | 5.1 | 4.0 | 3.3 | 4.1 | 5.9 | 8.3 | 8.0 | 9.9 | 7.2 | 50 |
| North Northeast | 9.7 | 10.5 | 8.5 | 6.6 | 6.9 | 5.5 | 4.7 | 6.0 | 8.1 | 10.4 | 8.0 | 8.9 | 7.8 | 50 |
| Northeast | 7.5 | 8.3 | 9.1 | 8.3 | 10.0 | 9.2 | 7.8 | 10.5 | 13.9 | 12.5 | 8.6 | 7.3 | 9.4 | 50 |
| East Northeast | 3.0 | 3.7 | 4.9 | 5.6 | 6.8 | 6.6 | 5.4 | 7.5 | 8.7 | 6.8 | 3.7 | 3.0 | 5.5 | 50 |
| East | 1.8 | 2.7 | 3.8 | 3.5 | 4.6 | 4.8 | 4.2 | 4.8 | 5.6 | 4.1 | 2.8 | 2.0 | 3.7 | 50 |
| East Southeast | 1.5 | 2.3 | 3.7 | 4.0 | 4.4 | 4.7 | 3.9 | 4.0 | 4.0 | 2.6 | 2.3 | 1.5 | 3.2 | 50 |
| Southeast | 2.6 | 3.2 | 4.2 | 5.0 | 5.8 | 5.9 | 5.1 | 5.2 | 4.8 | 3.6 | 3.1 | 2.5 | 4.3 | 50 |
| South Southeast | 2.9 | 3.6 | 4.7 | 5.5 | 5.9 | 5.6 | 5.3 | 5.4 | 4.4 | 3.5 | 3.7 | 3.1 | 4.5 | 50 |
| South | 7.0 | 6.6 | 7.4 | 9.0 | 9.2 | 9.2 | 10.2 | 9.4 | 8.0 | 6.8 | 8.5 | 7.4 | 8.2 | 50 |
| South Southwest | 8.2 | 7.9 | 8.2 | 10.3 | 9.7 | 11.3 | 12.8 | 10.3 | 8.4 | 7.7 | 9.0 | 8.8 | 9.4 | 50 |
| Southwest | 9.6 | 8.7 | 8.7 | 10.8 | 11.0 | 12.8 | 15.8 | 12.4 | 9.0 | 8.8 | 10.4 | 10.7 | 10.7 | 50 |
| West Southwest | 6.2 | 6.2 | 5.4 | 5.8 | 5.7 | 6.1 | 7.3 | 5.4 | 3.9 | 4.5 | 6.1 | 6.6 | 5.8 | 50 |
| West | 6.2 | 5.2 | 4.7 | 4.7 | 3.8 | 4.1 | 3.9 | 3.2 | 2.6 | 3.0 | 5.1 | 5.9 | 4.4 | 50 |
| West Northwest | 5.8 | 5.4 | 5.3 | 4.4 | 3.1 | 2.6 | 2.4 | 1.9 | 2.1 | 3.1 | 5.0 | 5.7 | 3.9 | 50 |
| Northwest | 6.8 | 6.1 | 5.8 | 4.2 | 2.8 | 2.4 | 2.1 | 2.5 | 3.0 | 4.8 | 6.2 | 7.2 | 4.5 | 50 |
| North Northwest | 6.9 | 6.1 | 5.2 | 3.9 | 2.4 | 2.0 | 1.7 | 2.0 | 2.4 | 4.4 | 5.6 | 6.1 | 4.1 | 50 |
| Calm | 2.7 | 2.4 | 1.8 | 1.8 | 2.8 | 3.2 | 4.0 | 5.2 | 5.1 | 5.0 | 3.9 | 3.6 | 3.5 | 50 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 11.3 | 11.9 | 12.0 | 12.1 | 10.6 | 10.1 | 8.9 | 9.5 | 11.3 | 11.6 | 11.2 | 11.4 | 11.3 | 50 |
| North Northeast | 10.5 | 11.2 | 11.6 | 11.3 | 10.7 | 9.5 | 8.8 | 9.8 | 11.5 | 12.0 | 11.0 | 11.1 | 10.9 | 50 |
| Northeast | 9.8 | 10.1 | 10.5 | 10.5 | 10.6 | 9.9 | 9.1 | 9.7 | 11.1 | 11.3 | 10.1 | 9.4 | 10.3 | 50 |
| East Northeast | 7.9 | 9.0 | 9.8 | 9.9 | 9.3 | 9.5 | 8.6 | 8.8 | 9.7 | 9.5 | 8.5 | 7.9 | 9.2 | 50 |
| East | 7.0 | 7.5 | 8.2 | 8.2 | 7.6 | 7.5 | 7.0 | 6.8 | 7.0 | 7.6 | 7.5 | 7.0 | 7.4 | 50 |
| East Southeast | 6.5 | 7.8 | 8.2 | 8.2 | 7.3 | 7.3 | 6.6 | 6.6 | 6.5 | 6.9 | 7.8 | 7.0 | 7.2 | 50 |
| Southeast | 7.3 | 8.0 | 8.3 | 8.1 | 7.8 | 7.3 | 6.9 | 6.5 | 6.6 | 6.6 | 7.3 | 7.3 | 7.3 | 50 |
| South Southeast | 7.9 | 8.2 | 9.1 | 8.4 | 7.9 | 7.0 | 6.5 | 6.6 | 6.5 | 6.8 | 7.9 | 7.8 | 7.5 | 50 |
| South | 8.6 | 8.7 | 10.3 | 9.5 | 8.6 | 7.8 | 7.4 | 7.2 | 6.9 | 7.2 | 8.3 | 8.4 | 8.2 | 50 |
| South Southwest | 9.7 | 10.3 | 11.0 | 11.0 | 9.6 | 9.1 | 8.5 | 7.9 | 7.9 | 7.8 | 8.9 | 9.4 | 9.2 | 50 |
| Southwest | 10.8 | 10.7 | 11.8 | 11.2 | 10.1 | 9.5 | 9.0 | 8.3 | 8.1 | 8.3 | 9.0 | 9.8 | 9.6 | 50 |
| West Southwest | 10.9 | 11.5 | 11.7 | 10.9 | 9.7 | 9.0 | 8.4 | 7.8 | 8.1 | 8.3 | 9.4 | 10.1 | 9.7 | 50 |
| West | 10.8 | 11.2 | 11.5 | 10.6 | 9.0 | 8.0 | 7.4 | 6.9 | 7.1 | 7.8 | 9.5 | 9.8 | 9.5 | 50 |
| West Northwest | 10.8 | 12.0 | 12.2 | 11.1 | 9.1 | 8.7 | 7.2 | 7.2 | 7.5 | 8.8 | 9.9 | 10.6 | 10.2 | 50 |
| Northwest | 10.9 | 11.7 | 12.3 | 11.1 | 9.3 | 8.1 | 7.0 | 6.8 | 8.1 | 9.3 | 10.4 | 10.7 | 10.2 | 50 |
| North Northwest | 12.0 | 11.8 | 12.3 | 11.7 | 10.1 | 9.0 | 8.2 | 8.3 | 9.9 | 11.5 | 11.5 | 11.6 | 11.2 | 50 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 13 | 12 | 12 | 11 | 13 | 12 | 13 | 16 | 14 | 14 | 13 | 12 | 155 | 50 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| CAPE HATTERAS, NC (35°16'N, 75°33'W) 23 feet (7 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1019.4 | 1018.1 | 1017.1 | 1016.4 | 1017.1 | 1016.1 | 1017.1 | 1016.9 | 1018.1 | 1018.4 | 1019.3 | 1020.2 | 1017.9 | 39 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 45.4 | 46.2 | 51.6 | 59.6 | 67.4 | 74.6 | 79.0 | 78.6 | 74.6 | 65.6 | 57.3 | 49.3 | 62.6 | 41 |
| Mean daily maximum | 52.8 | 53.8 | 59.3 | 67.5 | 74.6 | 81.1 | 85.1 | 84.7 | 80.8 | 72.3 | 64.6 | 56.7 | 69.6 | 41 |
| Mean daily minimum | 37.5 | 38.0 | 43.4 | 51.2 | 59.7 | 67.6 | 72.3 | 71.9 | 67.9 | 58.5 | 49.6 | 41.5 | 55.1 | 41 |
| Extreme (highest) | 75 | 76 | 81 | 89 | 91 | 95 | 96 | 94 | 92 | 89 | 81 | 78 | 96 | 41 |
| Extreme (lowest) | 6 | 14 | 19 | 26 | 39 | 44 | 54 | 56 | 45 | 32 | 22 | 12 | 6 | 41 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 68.9 | 56.0 | 45.8 | 39.5 | 45.6 | 35.6 | 46.5 | 44.4 | 55.5 | 59.0 | 68.2 | 77.3 | 53.6 | 39 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 29.4 | 27.3 | 29.2 | 32.4 | 26.1 | 21.3 | 19.2 | 18.6 | 26.8 | 32.6 | 30.7 | 30.1 | 27.0 | 38 |
| Percent of time scattered | 11.1 | 11.7 | 13.3 | 16.3 | 18.7 | 20.7 | 21.2 | 22.4 | 23.0 | 17.6 | 15.6 | 14.1 | 17.2 | 38 |
| Percent of time broken | 12.2 | 11.2 | 12.2 | 14.6 | 18.0 | 21.0 | 23.0 | 21.7 | 17.6 | 14.9 | 15.1 | 12.8 | 16.2 | 38 |
| Percent of time overcast | 43.7 | 46.9 | 42.6 | 33.5 | 32.6 | 32.7 | 31.0 | 32.2 | 28.6 | 31.1 | 34.8 | 39.8 | 35.7 | 38 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 5.4 | 4.0 | 4.6 | 3.2 | 3.7 | 4.2 | 5.0 | 6.2 | 5.3 | 5.2 | 4.9 | 4.5 | 56.7 | 41 |
| Greatest amount | 12.4 | 8.4 | 11.2 | 9.5 | 11.4 | 10.8 | 9.9 | 16.1 | 20.0 | 15.0 | 16.2 | 9.6 | 90.8 | 41 |
| Least amount | 1.7 | 1.0 | 0.9 | 0.3 | 0.3 | 0.3 | 0.4 | 0.9 | 0.0 | 0.5 | 1.1 | 0.6 | 41.5 | 41 |
| Maximum amount (24 hours) | 5.9 | 2.8 | 4.5 | 5.1 | 3.2 | 6.1 | 5.2 | 7.5 | 5.4 | 8.3 | 7.6 | 3.5 | 8.30 | 41 |
| Mean number of days | 14 | 13 | 13 | 11 | 12 | 11 | 14 | 13 | 12 | 11 | 11 | 13 | 148 | 41 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 0.4 | 0.5 | 0.4 | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 0.5 | 1.9 | 39 |
| Greatest amount | 3.5 | 4.4 | 8.5 | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 13.5 | 13.8 | 39 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39 |
| Maximum amount (24 hours) | 3.5 | 4.4 | 7.0 | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 8.2 | 8.2 | 39 |
| Mean number of days | 2.0 | 1.0 | Miss | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | 1.0 | 4.0 | 41 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.07 | 0.02 | 0.02 | 0.00 | 0.01 | 0.00 | 0.07 | 0.10 | 0.05 | 0.03 | 0.01 | 0.06 | 39 |
| Mean wind speed (knots) | 10.5 | 10.6 | 10.4 | 10.2 | 9.5 | 9.2 | 8.6 | 8.3 | 9.2 | 9.8 | 9.7 | 10.1 | 9.7 | 39 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 15.3 | 12.7 | 7.8 | 5.8 | 4.5 | 2.8 | 1.8 | 3.8 | 5.7 | 10.6 | 12.4 | 14.1 | 8.1 | 39 |
| North Northeast | 13.7 | 16.1 | 14.2 | 10.0 | 10.1 | 8.6 | 5.0 | 8.9 | 14.8 | 18.5 | 13.4 | 12.7 | 12.1 | 39 |
| Northeast | 6.8 | 8.9 | 11.5 | 10.5 | 13.6 | 11.9 | 8.2 | 12.3 | 19.4 | 15.9 | 8.9 | 7.0 | 11.3 | 39 |
| East Northeast | 2.3 | 2.8 | 5.3 | 5.5 | 5.8 | 6.7 | 5.3 | 7.1 | 8.3 | 6.1 | 4.1 | 2.3 | 5.1 | 39 |
| East | 1.1 | 1.2 | 2.1 | 2.8 | 3.4 | 3.1 | 3.2 | 3.4 | 3.2 | 2.9 | 1.9 | 1.0 | 2.4 | 39 |
| East Southeast | 1.0 | 1.2 | 1.9 | 2.3 | 2.5 | 3.0 | 2.5 | 2.7 | 3.3 | 2.5 | 1.8 | 1.0 | 2.2 | 39 |
| Southeast | 1.1 | 1.4 | 2.1 | 2.4 | 2.9 | 3.6 | 2.4 | 2.9 | 3.2 | 2.3 | 2.1 | 1.1 | 2.3 | 39 |
| South Southeast | 1.5 | 1.9 | 2.6 | 3.0 | 3.7 | 3.5 | 2.6 | 3.4 | 3.2 | 2.4 | 2.5 | 1.9 | 2.7 | 39 |
| South | 3.1 | 3.3 | 4.4 | 5.8 | 6.9 | 6.4 | 5.6 | 6.1 | 4.9 | 3.2 | 4.2 | 3.0 | 4.8 | 39 |
| South Southwest | 3.0 | 4.1 | 6.3 | 8.8 | 10.4 | 11.7 | 13.8 | 9.5 | 5.7 | 3.6 | 4.5 | 3.3 | 7.1 | 39 |
| Southwest | 6.3 | 8.8 | 10.5 | 15.8 | 16.4 | 18.2 | 23.2 | 16.2 | 8.7 | 5.5 | 6.5 | 6.8 | 11.9 | 39 |
| West Southwest | 9.2 | 9.4 | 9.1 | 9.9 | 8.9 | 10.4 | 14.4 | 10.9 | 6.0 | 5.4 | 7.4 | 8.6 | 9.1 | 39 |
| West | 7.6 | 6.2 | 5.6 | 4.7 | 3.2 | 3.3 | 4.7 | 3.6 | 3.4 | 4.2 | 6.5 | 8.3 | 5.1 | 39 |
| West Northwest | 8.3 | 6.3 | 5.2 | 3.7 | 2.4 | 1.8 | 2.2 | 2.3 | 2.6 | 4.2 | 7.1 | 8.5 | 4.5 | 39 |
| Northwest | 8.5 | 6.4 | 4.5 | 3.7 | 1.8 | 1.3 | 1.4 | 1.7 | 2.0 | 3.8 | 6.2 | 9.0 | 4.2 | 39 |
| North Northwest | 9.3 | 7.0 | 5.0 | 3.6 | 1.9 | 1.4 | 1.0 | 1.7 | 2.5 | 6.1 | 8.1 | 9.5 | 4.7 | 39 |
| Calm | 1.9 | 2.3 | 1.9 | 1.9 | 1.9 | 2.1 | 2.8 | 3.6 | 3.1 | 2.8 | 2.4 | 1.8 | 2.4 | 39 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 11.2 | 11.4 | 11.9 | 11.8 | 11.2 | 9.2 | 8.0 | 8.4 | 9.7 | 9.6 | 10.0 | 10.3 | 10.5 | 39 |
| North Northeast | 11.5 | 11.9 | 12.0 | 12.2 | 11.5 | 10.7 | 8.5 | 9.5 | 11.1 | 11.6 | 11.1 | 11.3 | 11.3 | 39 |
| Northeast | 10.2 | 10.2 | 10.1 | 10.5 | 10.4 | 9.8 | 9.0 | 9.5 | 10.5 | 11.1 | 9.9 | 10.7 | 10.2 | 39 |
| East Northeast | 8.3 | 7.7 | 8.2 | 8.5 | 8.4 | 8.5 | 8.1 | 7.9 | 9.4 | 9.3 | 8.6 | 9.4 | 8.6 | 39 |
| East | 8.3 | 6.8 | 7.3 | 7.3 | 7.4 | 8.0 | 7.2 | 7.1 | 8.2 | 9.2 | 7.7 | 8.8 | 7.7 | 39 |
| East Southeast | 10.0 | 8.3 | 7.5 | 7.2 | 7.4 | 7.6 | 7.2 | 7.1 | 8.7 | 9.8 | 9.3 | 8.6 | 8.1 | 39 |
| Southeast | 9.5 | 10.6 | 8.8 | 8.4 | 8.1 | 7.9 | 7.0 | 7.3 | 8.5 | 9.1 | 9.2 | 10.5 | 8.4 | 39 |
| South Southeast | 11.5 | 10.1 | 9.8 | 9.4 | 8.5 | 8.5 | 7.4 | 7.5 | 8.9 | 10.0 | 10.4 | 11.3 | 9.2 | 39 |
| South | 12.4 | 11.6 | 10.6 | 10.1 | 9.5 | 8.9 | 8.4 | 8.1 | 8.4 | 9.5 | 10.5 | 11.0 | 9.6 | 39 |
| South Southwest | 11.8 | 10.5 | 11.1 | 10.6 | 10.1 | 10.0 | 9.5 | 8.9 | 9.1 | 9.6 | 9.9 | 10.5 | 10.0 | 39 |
| Southwest | 12.0 | 11.5 | 11.4 | 11.2 | 10.2 | 10.2 | 10.1 | 9.8 | 9.5 | 10.4 | 10.8 | 11.2 | 10.5 | 39 |
| West Southwest | 11.1 | 11.0 | 10.1 | 10.8 | 9.3 | 9.6 | 9.3 | 8.9 | 8.7 | 9.8 | 10.5 | 10.7 | 10.0 | 39 |
| West | 10.0 | 10.2 | 9.9 | 9.3 | 7.7 | 8.1 | 7.6 | 7.2 | 7.3 | 8.2 | 9.1 | 9.2 | 8.9 | 39 |
| West Northwest | 9.4 | 10.3 | 10.7 | 9.3 | 7.5 | 7.9 | 6.7 | 6.4 | 6.7 | 7.6 | 8.7 | 8.9 | 8.8 | 39 |
| Northwest | 10.1 | 10.7 | 10.7 | 10.5 | 8.4 | 8.4 | 7.2 | 6.9 | 7.3 | 8.4 | 9.0 | 10.1 | 9.6 | 39 |
| North Northwest | 10.3 | 10.7 | 11.8 | 10.6 | 8.9 | 8.6 | 7.4 | 7.2 | 8.3 | 9.5 | 9.9 | 10.0 | 10.0 | 39 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 13 | 11 | 12 | 8 | 10 | 9 | 9 | 9 | 8 | 10 | 10 | 11 | 120 | 41 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| NEW BERN, NC (35°04'N, 77°03'W) 16 feet (4.9 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1021.6 | 1019.0 | 1016.7 | 1016.1 | 1014.6 | 1015.3 | 1017.1 | 1016.1 | 1017.1 | 1018.3 | 1018.4 | 1020.4 | 1017.6 | 6 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 45.0 | 46.6 | 53.6 | 62.0 | 69.6 | 76.5 | 80.1 | 79.0 | 74.0 | 64.3 | 54.9 | 46.9 | 62.8 | 38 |
| Mean daily maximum | 55.0 | 57.3 | 64.7 | 73.6 | 80.0 | 86.0 | 88.8 | 87.4 | 83.1 | 74.8 | 66.2 | 57.5 | 72.9 | 38 |
| Mean daily minimum | 34.4 | 35.5 | 42.0 | 49.8 | 58.7 | 66.5 | 70.9 | 70.0 | 64.4 | 53.3 | 43.2 | 35.9 | 52.1 | 38 |
| Extreme (highest) | 81 | 83 | 90 | 95 | 100 | 105 | 106 | 103 | 101 | 97 | 87 | 83 | 106 | 38 |
| Extreme (lowest) | 1 | 6 | 17 | 29 | 32 | 44 | 55 | 50 | 43 | 26 | 17 | -4 | -4 | 38 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 90.6 | 65.2 | 42.5 | 35.7 | 21.4 | 28.3 | 45.9 | 36.4 | 46.0 | 57.6 | 59.4 | 79.2 | 50.7 | 6 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 28.3 | 32.7 | 32.4 | 35.6 | 30.0 | 20.5 | 21.8 | 21.5 | 24.3 | 36.0 | 43.1 | 36.7 | 30.2 | 6 |
| Percent of time scattered | 15.3 | 14.4 | 15.2 | 18.3 | 20.1 | 24.2 | 23.7 | 23.7 | 21.7 | 16.5 | 15.4 | 12.8 | 18.5 | 6 |
| Percent of time broken | 16.6 | 16.1 | 15.4 | 17.7 | 22.0 | 29.2 | 29.8 | 29.0 | 22.7 | 16.8 | 13.6 | 13.0 | 20.2 | 6 |
| Percent of time overcast | 35.5 | 34.4 | 34.4 | 25.4 | 23.9 | 21.1 | 19.2 | 20.6 | 25.6 | 26.3 | 25.5 | 34.2 | 27.1 | 6 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 4.2 | 3.8 | 3.9 | 2.9 | 4.3 | 4.8 | 6.7 | 6.5 | 5.0 | 2.8 | 3.2 | 3.7 | 52.3 | 38 |
| Greatest amount | 8.0 | 9.3 | 9.1 | 5.5 | 8.0 | 8.6 | 16.0 | 13.0 | 13.9 | 9.8 | 7.6 | 9.7 | 70.8 | 38 |
| Least amount | 0.7 | 0.6 | 0.6 | 0.7 | 0.9 | 1.2 | 0.2 | 1.7 | 0.9 | 0.4 | 0.2 | 0.3 | 36.0 | 38 |
| Maximum amount (24 hours) | 3.8 | 2.7 | 3.2 | 2.2 | 4.5 | 3.1 | 7.3 | 8.8 | 7.4 | 2.9 | 3.3 | 4.7 | 8.8 | 38 |
| Mean number of days | 14 | 12 | 13 | 11 | 13 | 12 | 16 | 15 | 11 | 9 | 10 | 12 | 148 | 36 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 0.9 | 0.7 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 0.4 | 2.3 | 38 |
| Greatest amount | 16.5 | 13.0 | 11.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 8.8 | 19.1 | 38 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 38 |
| Maximum amount (24 hours) | 12.5 | 11.0 | 9.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 6.2 | 12.5 | 38 |
| Mean number of days | 2.0 | 1.0 | 1.0 | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | 1.0 | 5.0 | 36 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 1.39 | 6 |
| Mean wind speed (knots) | 7.8 | 8.1 | 8.4 | 8.5 | 7.0 | 6.7 | 6.5 | 6.1 | 6.1 | 6.2 | 6.4 | 6.8 | 7.0 | 6 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 4.2 | 8.4 | 6.1 | 4.1 | 5.4 | 4.2 | 2.4 | 5.9 | 8.6 | 9.4 | 5.1 | 6.6 | 5.9 | 6 |
| North Northeast | 6.2 | 7.0 | 4.4 | 2.9 | 6.7 | 6.0 | 5.2 | 9.4 | 14.4 | 15.9 | 6.5 | 7.5 | 7.7 | 6 |
| Northeast | 6.1 | 6.7 | 6.6 | 6.4 | 6.2 | 7.7 | 6.1 | 8.5 | 11.7 | 12.4 | 6.5 | 6.0 | 7.6 | 6 |
| East Northeast | 3.7 | 3.9 | 6.1 | 4.3 | 4.7 | 4.3 | 3.0 | 3.2 | 5.1 | 5.5 | 5.1 | 2.8 | 4.3 | 6 |
| East | 1.9 | 4.7 | 3.6 | 2.0 | 2.8 | 3.4 | 2.7 | 3.1 | 2.3 | 2.6 | 1.7 | 1.3 | 2.7 | 6 |
| East Southeast | 3.0 | 3.0 | 3.8 | 2.9 | 2.1 | 4.0 | 1.7 | 3.4 | 3.1 | 2.2 | 1.7 | 1.6 | 2.7 | 6 |
| Southeast | 2.4 | 3.6 | 3.3 | 2.7 | 4.6 | 3.7 | 3.0 | 3.2 | 3.1 | 3.2 | 2.6 | 2.3 | 3.1 | 6 |
| South Southeast | 3.8 | 3.3 | 3.6 | 3.8 | 4.7 | 5.8 | 5.3 | 5.5 | 4.0 | 2.1 | 3.5 | 3.5 | 4.1 | 6 |
| South | 5.9 | 4.5 | 5.0 | 9.8 | 8.2 | 9.4 | 11.6 | 11.4 | 5.9 | 3.0 | 5.1 | 4.1 | 7.0 | 6 |
| South Southwest | 14.1 | 9.3 | 9.7 | 15.8 | 10.3 | 12.6 | 14.2 | 10.1 | 6.4 | 4.1 | 7.4 | 6.5 | 10.0 | 6 |
| Southwest | 12.0 | 9.8 | 8.6 | 12.4 | 11.7 | 12.2 | 16.0 | 11.6 | 8.5 | 5.9 | 10.4 | 9.2 | 10.7 | 6 |
| West Southwest | 8.5 | 6.4 | 6.0 | 7.5 | 6.3 | 6.0 | 8.9 | 4.7 | 3.9 | 2.8 | 5.5 | 6.6 | 6.1 | 6 |
| West | 6.3 | 5.0 | 5.5 | 5.2 | 4.5 | 3.2 | 3.8 | 3.3 | 2.4 | 2.3 | 5.0 | 6.6 | 4.4 | 6 |
| West Northwest | 5.7 | 5.5 | 7.7 | 6.1 | 3.8 | 3.4 | 2.0 | 2.9 | 2.3 | 2.8 | 6.5 | 6.4 | 4.6 | 6 |
| Northwest | 5.8 | 7.6 | 7.3 | 4.5 | 4.2 | 3.2 | 2.8 | 2.8 | 3.6 | 4.8 | 7.5 | 7.3 | 5.1 | 6 |
| North Northwest | 4.0 | 5.5 | 6.3 | 3.8 | 4.8 | 2.7 | 1.6 | 2.1 | 2.8 | 5.9 | 4.3 | 6.3 | 4.2 | 6 |
| Calm | 6.6 | 6.0 | 6.3 | 5.8 | 9.0 | 8.0 | 9.7 | 9.0 | 11.7 | 15.1 | 15.8 | 15.5 | 9.9 | 6 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 8.0 | 8.6 | 8.7 | 9.2 | 7.3 | 7.7 | 6.4 | 7.3 | 7.6 | 9.1 | 8.7 | 9.2 | 8.3 | 6 |
| North Northeast | 9.5 | 9.0 | 8.4 | 8.6 | 8.0 | 8.3 | 8.0 | 7.6 | 8.7 | 8.9 | 7.7 | 9.1 | 8.5 | 6 |
| Northeast | 7.6 | 7.2 | 6.7 | 7.4 | 6.6 | 7.0 | 7.1 | 5.9 | 6.9 | 6.2 | 6.2 | 6.2 | 6.7 | 6 |
| East Northeast | 5.8 | 6.5 | 6.6 | 7.0 | 5.8 | 6.5 | 6.9 | 6.3 | 6.1 | 6.2 | 5.6 | 5.3 | 6.2 | 6 |
| East | 4.8 | 5.3 | 5.4 | 5.6 | 5.0 | 5.7 | 4.9 | 4.7 | 4.7 | 4.8 | 3.7 | 3.9 | 5.0 | 6 |
| East Southeast | 5.9 | 6.2 | 5.8 | 6.1 | 6.5 | 6.5 | 5.6 | 6.0 | 5.0 | 5.9 | 5.2 | 5.1 | 5.9 | 6 |
| Southeast | 4.8 | 5.0 | 6.4 | 6.5 | 5.7 | 5.5 | 6.0 | 4.9 | 4.8 | 5.0 | 4.8 | 4.3 | 5.3 | 6 |
| South Southeast | 6.6 | 7.3 | 9.0 | 7.3 | 6.4 | 6.5 | 6.4 | 7.0 | 6.0 | 5.3 | 6.8 | 8.2 | 6.9 | 6 |
| South | 8.0 | 9.0 | 9.4 | 8.9 | 7.6 | 7.5 | 7.7 | 6.8 | 6.5 | 6.8 | 7.4 | 7.0 | 7.7 | 6 |
| South Southwest | 9.7 | 10.9 | 11.7 | 10.7 | 9.5 | 8.2 | 7.7 | 7.8 | 7.6 | 7.6 | 9.3 | 9.1 | 9.3 | 6 |
| Southwest | 8.5 | 8.3 | 9.4 | 9.1 | 8.4 | 7.2 | 7.6 | 6.5 | 6.7 | 6.2 | 7.4 | 7.9 | 7.8 | 6 |
| West Southwest | 8.7 | 9.7 | 9.7 | 10.2 | 8.5 | 8.2 | 8.0 | 6.9 | 6.4 | 7.1 | 8.1 | 8.3 | 8.5 | 6 |
| West | 8.4 | 8.8 | 9.0 | 9.9 | 7.8 | 7.8 | 6.7 | 6.2 | 6.3 | 6.3 | 7.6 | 7.9 | 8.0 | 6 |
| West Northwest | 9.0 | 10.8 | 11.5 | 10.1 | 8.6 | 8.1 | 6.1 | 7.3 | 6.7 | 7.4 | 9.7 | 9.6 | 9.3 | 6 |
| Northwest | 8.8 | 9.6 | 9.5 | 9.4 | 7.7 | 6.8 | 5.7 | 6.5 | 5.6 | 7.0 | 7.7 | 7.9 | 8.0 | 6 |
| North Northwest | 9.5 | 10.4 | 10.2 | 10.3 | 8.4 | 7.2 | 5.7 | 8.3 | 6.5 | 9.0 | 9.3 | 9.0 | 9.0 | 6 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 15 | 13 | 15 | 13 | 18 | 19 | 21 | 22 | 22 | 20 | 17 | 15 | 210 | 36 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| WILMINGTON, NC (34°16'N, 77°54'W) 33 feet (10.1 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1020.2 | 1019.3 | 1017.6 | 1016.6 | 1016.5 | 1016.2 | 1017.2 | 1017.0 | 1017.7 | 1018.6 | 1019.6 | 1020.8 | 1018.1 | 45 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 46.1 | 48.5 | 54.7 | 62.9 | 70.6 | 77.1 | 80.9 | 79.7 | 74.9 | 65.0 | 56.1 | 48.6 | 63.8 | 50 |
| Mean daily maximum | 56.2 | 59.0 | 65.4 | 74.0 | 80.7 | 86.4 | 89.5 | 88.2 | 83.7 | 75.4 | 67.2 | 59.2 | 73.8 | 50 |
| Mean daily minimum | 35.6 | 37.5 | 43.5 | 51.4 | 60.0 | 67.4 | 71.8 | 70.7 | 65.5 | 54.2 | 44.5 | 37.5 | 53.4 | 50 |
| Extreme (highest) | 82 | 85 | 89 | 95 | 98 | 104 | 102 | 102 | 98 | 95 | 87 | 81 | 104 | 50 |
| Extreme (lowest) | 5 | 11 | 9 | 30 | 35 | 48 | 55 | 55 | 44 | 27 | 16 | 0 | 0 | 50 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 77.1 | 68.2 | 50.6 | 40.7 | 40.1 | 36.7 | 47.4 | 45.3 | 52.0 | 60.8 | 70.7 | 82.6 | 56.0 | 50 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 29.8 | 28.4 | 29.9 | 32.7 | 24.1 | 18.5 | 15.1 | 17.5 | 22.6 | 34.7 | 36.0 | 31.9 | 26.7 | 48 |
| Percent of time scattered | 12.6 | 13.2 | 14.5 | 18.1 | 20.9 | 23.5 | 23.5 | 23.8 | 21.4 | 17.5 | 15.2 | 14.2 | 18.2 | 48 |
| Percent of time broken | 12.2 | 12.7 | 14.3 | 16.4 | 21.0 | 25.2 | 28.7 | 25.6 | 20.1 | 14.9 | 13.5 | 13.9 | 18.3 | 48 |
| Percent of time overcast | 41.7 | 42.0 | 37.3 | 28.2 | 28.8 | 26.9 | 25.8 | 27.2 | 30.5 | 28.4 | 31.3 | 36.3 | 32.0 | 48 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 3.8 | 3.5 | 4.2 | 2.9 | 4.2 | 5.4 | 7.9 | 6.9 | 5.8 | 3.3 | 3.2 | 3.5 | 55.0 | 50 |
| Greatest amount | 10.2 | 8.7 | 8.2 | 8.2 | 9.1 | 12.8 | 18.0 | 14.0 | 18.9 | 9.8 | 7.8 | 7.0 | 66.6 | 50 |
| Least amount | 0.6 | 0.6 | 0.9 | 0.1 | 0.9 | 0.8 | 1.6 | 1.6 | 0.7 | 0.1 | 0.4 | 0.4 | 36.9 | 50 |
| Maximum amount (24 hours) | 2.5 | 2.6 | 4.3 | 3.5 | 4.3 | 4.7 | 6.4 | 4.8 | 7.4 | 5.5 | 4.0 | 3.8 | 7.4 | 50 |
| Mean number of days | 13 | 12 | 13 | 11 | 13 | 13 | 17 | 15 | 13 | 10 | 11 | 12 | 153 | 50 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 0.4 | 0.5 | 0.4 | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 0.5 | 1.8 | 50 |
| Greatest amount | 5.4 | 12.5 | 6.6 | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 15.3 | 16.1 | 50 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| Maximum amount (24 hours) | 5.0 | 6.8 | 5.2 | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 9.6 | 9.6 | 50 |
| Mean number of days | 1.0 | 1.0 | 1.0 | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | 1.0 | 4.0 | 50 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.01 | 0.04 | 0.08 | 0.04 | 0.00 | 0.00 | 0.02 | 0.07 | 0.09 | 0.01 | 0.00 | 0.00 | 0.08 | 49 |
| Mean wind speed (knots) | 7.7 | 8.2 | 8.6 | 8.6 | 7.7 | 7.2 | 6.8 | 6.2 | 6.5 | 6.8 | 6.9 | 7.2 | 7.3 | 49 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 8.8 | 8.4 | 6.6 | 4.8 | 5.1 | 4.7 | 3.5 | 6.2 | 10.0 | 12.2 | 10.0 | 10.2 | 7.5 | 49 |
| North Northeast | 7.6 | 7.4 | 5.1 | 4.0 | 4.9 | 5.4 | 4.2 | 7.1 | 12.0 | 12.4 | 8.2 | 8.1 | 7.2 | 49 |
| Northeast | 6.5 | 6.6 | 5.1 | 3.9 | 5.2 | 5.7 | 3.9 | 6.7 | 11.1 | 11.1 | 6.1 | 6.1 | 6.5 | 49 |
| East Northeast | 3.9 | 4.3 | 4.7 | 3.8 | 4.5 | 4.2 | 3.4 | 4.0 | 5.4 | 5.0 | 4.2 | 3.3 | 4.2 | 49 |
| East | 2.8 | 3.4 | 5.0 | 4.5 | 5.2 | 5.1 | 3.7 | 4.6 | 5.5 | 3.9 | 3.1 | 2.4 | 4.1 | 49 |
| East Southeast | 2.3 | 2.9 | 4.1 | 4.2 | 5.1 | 5.4 | 3.5 | 4.4 | 4.2 | 3.1 | 2.7 | 1.8 | 3.6 | 49 |
| Southeast | 2.1 | 3.1 | 3.8 | 5.4 | 5.4 | 5.6 | 4.7 | 5.4 | 4.2 | 3.0 | 3.1 | 2.2 | 4.0 | 49 |
| South Southeast | 2.3 | 2.6 | 3.7 | 5.3 | 5.7 | 5.6 | 5.4 | 5.5 | 3.4 | 2.5 | 2.8 | 2.1 | 3.9 | 49 |
| South | 3.3 | 4.0 | 5.8 | 7.6 | 7.8 | 8.0 | 8.3 | 6.6 | 4.4 | 3.1 | 3.6 | 3.4 | 5.5 | 49 |
| South Southwest | 5.6 | 6.4 | 8.3 | 10.4 | 9.8 | 9.6 | 12.2 | 7.9 | 4.7 | 3.6 | 4.8 | 5.4 | 7.4 | 49 |
| Southwest | 8.8 | 9.4 | 10.0 | 12.6 | 11.3 | 12.0 | 17.0 | 10.5 | 5.1 | 4.5 | 7.1 | 8.6 | 9.8 | 49 |
| West Southwest | 8.4 | 6.9 | 6.6 | 7.5 | 7.0 | 7.0 | 9.7 | 6.7 | 4.3 | 3.9 | 6.3 | 7.4 | 6.8 | 49 |
| West | 6.6 | 5.6 | 5.8 | 5.3 | 4.1 | 4.2 | 4.7 | 4.0 | 3.0 | 3.3 | 5.4 | 5.8 | 4.8 | 49 |
| West Northwest | 6.2 | 5.9 | 5.6 | 4.7 | 3.5 | 3.0 | 2.5 | 2.4 | 2.1 | 2.9 | 4.9 | 5.8 | 4.1 | 49 |
| Northwest | 7.6 | 6.7 | 6.0 | 4.6 | 3.2 | 2.3 | 1.8 | 2.1 | 2.5 | 4.5 | 6.3 | 7.4 | 4.6 | 49 |
| North Northwest | 7.2 | 7.0 | 5.4 | 4.2 | 3.5 | 2.5 | 2.0 | 3.0 | 4.1 | 5.9 | 6.9 | 7.0 | 4.9 | 49 |
| Calm | 10.2 | 9.4 | 8.4 | 7.3 | 8.7 | 9.7 | 9.6 | 12.8 | 14.0 | 15.0 | 14.6 | 13.2 | 11.1 | 49 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 8.4 | 8.8 | 8.7 | 8.7 | 8.3 | 8.0 | 6.7 | 7.2 | 8.2 | 8.9 | 8.7 | 8.1 | 8.3 | 49 |
| North Northeast | 8.3 | 8.8 | 8.9 | 8.5 | 8.5 | 7.6 | 7.1 | 7.3 | 8.0 | 8.6 | 8.0 | 8.4 | 8.2 | 49 |
| Northeast | 7.7 | 7.9 | 8.0 | 7.7 | 7.3 | 7.1 | 6.4 | 6.7 | 7.7 | 7.9 | 7.0 | 7.6 | 7.5 | 49 |
| East Northeast | 7.1 | 7.9 | 8.2 | 8.1 | 7.9 | 7.7 | 7.2 | 6.9 | 7.8 | 7.7 | 6.8 | 6.8 | 7.5 | 49 |
| East | 6.8 | 7.8 | 8.4 | 8.3 | 8.6 | 8.3 | 7.3 | 7.4 | 8.1 | 7.6 | 7.0 | 6.7 | 7.8 | 49 |
| East Southeast | 6.3 | 7.3 | 8.1 | 8.3 | 7.8 | 8.1 | 7.0 | 7.0 | 7.6 | 7.4 | 6.6 | 6.4 | 7.5 | 49 |
| Southeast | 7.5 | 8.2 | 8.5 | 8.7 | 8.7 | 8.2 | 7.4 | 7.2 | 7.7 | 7.7 | 7.8 | 7.5 | 8.0 | 49 |
| South Southeast | 8.9 | 9.3 | 9.3 | 8.9 | 8.3 | 7.8 | 7.3 | 7.1 | 7.3 | 7.7 | 8.4 | 8.0 | 8.1 | 49 |
| South | 9.1 | 9.7 | 9.4 | 9.9 | 8.9 | 8.3 | 7.8 | 7.2 | 7.1 | 7.5 | 8.5 | 8.6 | 8.5 | 49 |
| South Southwest | 9.3 | 10.2 | 11.2 | 11.2 | 10.0 | 9.0 | 8.8 | 7.9 | 7.8 | 8.0 | 8.7 | 9.2 | 9.4 | 49 |
| Southwest | 9.0 | 9.4 | 9.9 | 9.6 | 8.8 | 8.2 | 8.0 | 7.4 | 7.0 | 7.6 | 8.1 | 8.5 | 8.5 | 49 |
| West Southwest | 8.8 | 9.0 | 9.2 | 8.7 | 7.8 | 7.5 | 7.2 | 6.8 | 6.7 | 7.6 | 8.2 | 8.3 | 8.0 | 49 |
| West | 8.8 | 9.5 | 9.6 | 9.2 | 7.6 | 7.4 | 7.0 | 6.5 | 6.8 | 7.1 | 8.2 | 8.3 | 8.2 | 49 |
| West Northwest | 9.4 | 10.4 | 10.4 | 9.8 | 7.7 | 7.2 | 6.3 | 6.3 | 6.5 | 7.0 | 8.4 | 8.6 | 8.6 | 49 |
| Northwest | 9.4 | 9.4 | 9.9 | 9.7 | 7.7 | 7.0 | 5.7 | 6.4 | 6.8 | 7.9 | 8.8 | 9.0 | 8.7 | 49 |
| North Northwest | 9.1 | 9.2 | 9.7 | 9.2 | 8.0 | 7.2 | 6.1 | 6.5 | 7.7 | 8.5 | 8.4 | 8.8 | 8.5 | 49 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 15 | 13 | 14 | 12 | 15 | 16 | 14 | 18 | 17 | 16 | 15 | 14 | 179 | 50 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| CHARLESTON, SC (32°54'N, 80°02'W) 46 feet (14 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1020.7 | 1019.5 | 1017.7 | 1017.2 | 1016.5 | 1016.2 | 1017.4 | 1017.0 | 1017.5 | 1018.5 | 1019.7 | 1021.0 | 1018.2 | 52 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 48.7 | 51.1 | 57.5 | 64.8 | 72.6 | 78.3 | 81.4 | 80.5 | 76.0 | 66.6 | 57.7 | 50.6 | 65.6 | 52 |
| Mean daily maximum | 59.2 | 62.0 | 68.4 | 76.1 | 82.9 | 87.5 | 90.0 | 88.9 | 84.6 | 76.8 | 68.9 | 61.3 | 75.7 | 52 |
| Mean daily minimum | 37.8 | 39.8 | 46.2 | 53.0 | 61.7 | 68.6 | 72.3 | 71.5 | 67.0 | 55.8 | 46.0 | 39.4 | 55.0 | 52 |
| Extreme (highest) | 83 | 87 | 90 | 94 | 98 | 101 | 104 | 102 | 97 | 94 | 88 | 83 | 104 | 52 |
| Extreme (lowest) | 6 | 12 | 15 | 30 | 36 | 50 | 58 | 56 | 42 | 27 | 15 | 8 | 6 | 52 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 81.5 | 70.5 | 51.6 | 47.0 | 40.1 | 37.5 | 49.4 | 45.1 | 49.8 | 60.4 | 72.2 | 85.4 | 57.5 | 53 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 26.7 | 27.6 | 27.4 | 30.5 | 21.5 | 16.0 | 12.5 | 14.5 | 20.8 | 33.6 | 34.0 | 28.8 | 24.4 | 50 |
| Percent of time scattered | 13.6 | 13.5 | 15.2 | 18.6 | 21.4 | 23.0 | 22.4 | 23.2 | 22.1 | 18.2 | 16.5 | 14.7 | 18.6 | 50 |
| Percent of time broken | 13.6 | 15.0 | 15.8 | 17.9 | 23.3 | 27.4 | 30.5 | 28.9 | 23.4 | 16.8 | 15.0 | 15.4 | 20.3 | 50 |
| Percent of time overcast | 41.9 | 39.5 | 37.3 | 28.2 | 28.4 | 27.1 | 26.7 | 26.0 | 27.8 | 26.9 | 30.0 | 36.5 | 31.3 | 50 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 3.4 | 3.0 | 4.3 | 2.8 | 3.9 | 6.1 | 7.2 | 6.7 | 5.7 | 3.1 | 2.4 | 3.0 | 52.2 | 52 |
| Greatest amount | 8.9 | 6.3 | 11.1 | 9.5 | 9.2 | 27.2 | 18.4 | 16.9 | 17.3 | 12.1 | 7.3 | 7.0 | 72.9 | 52 |
| Least amount | 0.6 | 0.3 | 0.7 | 0.0 | 0.7 | 0.9 | 1.7 | 0.7 | 0.1 | 0.1 | 0.4 | 0.6 | 30.3 | 52 |
| Maximum amount (24 hours) | 3.9 | 2.2 | 4.4 | 4.1 | 6.2 | 9.4 | 5.3 | 4.6 | 6.1 | 4.4 | 5.2 | 3.4 | 9.4 | 52 |
| Mean number of days | 14 | 12 | 13 | 10 | 13 | 15 | 17 | 17 | 14 | 10 | 11 | 12 | 158 | 52 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 0.2 | 0.6 | 51 |
| Greatest amount | 1.0 | 7.1 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 8.0 | 8.9 | 51 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 51 |
| Maximum amount (24 hours) | 0.8 | 5.4 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 6.0 | 6.0 | 51 |
| Mean number of days | 1.0 | 1.0 | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | Miss | 2.0 | 52 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.02 | 0.03 | 0.04 | 0.02 | 0.01 | 0.01 | 0.00 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.08 | 53 |
| Mean wind speed (knots) | 7.8 | 8.4 | 8.6 | 8.3 | 7.3 | 7.1 | 6.7 | 6.3 | 6.6 | 6.8 | 7.0 | 7.3 | 7.3 | 53 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 7.8 | 6.8 | 5.0 | 4.4 | 4.9 | 4.8 | 3.6 | 6.2 | 9.5 | 11.8 | 9.5 | 9.0 | 6.9 | 53 |
| North Northeast | 9.2 | 8.2 | 5.7 | 4.5 | 5.5 | 6.2 | 4.6 | 8.3 | 15.4 | 16.4 | 10.6 | 10.1 | 8.7 | 53 |
| Northeast | 7.3 | 7.5 | 5.9 | 4.4 | 5.6 | 6.4 | 4.5 | 7.8 | 12.2 | 12.0 | 8.2 | 7.6 | 7.4 | 53 |
| East Northeast | 3.8 | 4.7 | 4.6 | 4.0 | 4.3 | 4.0 | 3.1 | 4.2 | 5.6 | 5.5 | 4.6 | 3.6 | 4.3 | 53 |
| East | 2.6 | 3.1 | 3.9 | 3.8 | 3.9 | 3.7 | 3.1 | 4.0 | 4.8 | 3.7 | 3.2 | 2.2 | 3.5 | 53 |
| East Southeast | 2.9 | 2.9 | 4.4 | 4.7 | 4.8 | 4.6 | 3.6 | 3.9 | 4.3 | 3.5 | 3.3 | 2.4 | 3.8 | 53 |
| Southeast | 2.3 | 3.0 | 4.2 | 5.7 | 5.4 | 5.7 | 4.5 | 4.8 | 4.1 | 2.7 | 2.6 | 2.7 | 4.0 | 53 |
| South Southeast | 2.7 | 3.5 | 5.2 | 6.7 | 7.0 | 7.3 | 6.4 | 6.3 | 4.4 | 2.6 | 2.8 | 2.7 | 4.8 | 53 |
| South | 4.6 | 5.6 | 8.1 | 9.9 | 11.4 | 11.1 | 12.3 | 9.7 | 5.9 | 3.8 | 4.8 | 4.4 | 7.6 | 53 |
| South Southwest | 7.4 | 9.1 | 10.6 | 11.2 | 11.1 | 10.8 | 14.1 | 9.0 | 5.1 | 3.6 | 6.0 | 6.9 | 8.7 | 53 |
| Southwest | 7.7 | 7.7 | 7.4 | 8.4 | 8.2 | 8.9 | 12.3 | 8.3 | 4.2 | 3.7 | 6.0 | 6.9 | 7.5 | 53 |
| West Southwest | 7.8 | 6.9 | 6.9 | 7.1 | 6.1 | 6.6 | 8.7 | 6.4 | 3.7 | 4.1 | 6.2 | 7.6 | 6.5 | 53 |
| West | 7.9 | 7.4 | 7.0 | 6.0 | 4.7 | 4.5 | 5.1 | 3.8 | 2.8 | 3.8 | 6.5 | 7.4 | 5.6 | 53 |
| West Northwest | 7.8 | 7.1 | 6.4 | 5.6 | 3.6 | 3.2 | 3.0 | 2.8 | 2.6 | 3.7 | 6.1 | 6.8 | 4.9 | 53 |
| Northwest | 5.7 | 5.0 | 4.6 | 3.4 | 3.3 | 2.6 | 2.0 | 2.5 | 2.5 | 3.9 | 4.9 | 5.5 | 3.8 | 53 |
| North Northwest | 6.3 | 5.6 | 4.8 | 4.0 | 3.6 | 3.3 | 2.6 | 3.6 | 4.6 | 6.8 | 6.6 | 6.7 | 4.9 | 53 |
| Calm | 6.2 | 5.9 | 5.3 | 6.2 | 6.6 | 6.3 | 6.5 | 8.5 | 8.2 | 8.4 | 8.1 | 7.6 | 7.0 | 53 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 7.7 | 8.1 | 8.0 | 7.9 | 7.4 | 6.8 | 5.8 | 6.2 | 6.7 | 7.4 | 7.4 | 7.5 | 7.3 | 53 |
| North Northeast | 7.8 | 8.0 | 8.0 | 7.7 | 7.4 | 7.0 | 6.1 | 6.5 | 7.7 | 8.0 | 7.6 | 7.9 | 7.6 | 53 |
| Northeast | 7.3 | 7.8 | 7.6 | 7.2 | 7.3 | 7.1 | 6.5 | 6.7 | 7.7 | 7.6 | 7.0 | 7.3 | 7.3 | 53 |
| East Northeast | 7.0 | 7.7 | 8.2 | 8.3 | 7.4 | 7.8 | 6.8 | 6.9 | 7.5 | 7.4 | 6.6 | 6.7 | 7.4 | 53 |
| East | 6.4 | 7.6 | 7.9 | 8.2 | 8.0 | 8.2 | 7.2 | 7.1 | 7.7 | 7.3 | 6.7 | 6.4 | 7.5 | 53 |
| East Southeast | 6.5 | 7.5 | 8.0 | 8.2 | 8.0 | 8.2 | 7.3 | 7.1 | 7.7 | 7.2 | 6.5 | 6.6 | 7.5 | 53 |
| Southeast | 6.9 | 7.8 | 8.0 | 8.4 | 7.8 | 7.7 | 6.8 | 7.4 | 7.3 | 6.9 | 6.9 | 6.4 | 7.5 | 53 |
| South Southeast | 6.7 | 7.7 | 8.3 | 8.3 | 7.6 | 7.2 | 7.1 | 7.0 | 6.8 | 6.9 | 7.2 | 6.8 | 7.4 | 53 |
| South | 7.8 | 8.9 | 9.3 | 8.8 | 8.1 | 7.6 | 7.4 | 7.1 | 6.7 | 6.6 | 7.6 | 7.8 | 7.8 | 53 |
| South Southwest | 9.0 | 9.9 | 10.0 | 9.7 | 8.2 | 7.8 | 7.6 | 7.0 | 6.8 | 7.3 | 8.5 | 9.0 | 8.5 | 53 |
| Southwest | 8.7 | 9.0 | 9.3 | 9.1 | 8.0 | 7.8 | 7.6 | 7.0 | 6.8 | 7.1 | 7.8 | 8.5 | 8.1 | 53 |
| West Southwest | 9.1 | 9.7 | 10.0 | 9.4 | 8.3 | 8.1 | 7.6 | 7.2 | 6.9 | 7.7 | 8.0 | 8.5 | 8.5 | 53 |
| West | 9.9 | 10.7 | 10.7 | 10.1 | 8.7 | 7.8 | 7.3 | 6.9 | 6.9 | 7.6 | 8.9 | 9.3 | 9.1 | 53 |
| West Northwest | 10.1 | 11.0 | 10.7 | 10.3 | 8.1 | 7.3 | 7.1 | 6.8 | 6.9 | 7.5 | 8.6 | 9.1 | 9.1 | 53 |
| Northwest | 8.7 | 9.3 | 9.4 | 8.9 | 7.3 | 6.8 | 6.2 | 6.1 | 6.4 | 7.1 | 7.3 | 7.8 | 7.9 | 53 |
| North Northwest | 7.9 | 8.3 | 8.6 | 8.3 | 7.2 | 6.7 | 5.7 | 6.2 | 6.2 | 7.0 | 7.1 | 7.4 | 7.3 | 53 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 14 | 11 | 13 | 12 | 14 | 14 | 11 | 14 | 16 | 14 | 14 | 14 | 161 | 52 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| BEAUFORT, SC (32°29'N, 80°43'W) 33 feet (10.1 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1020.4 | 1018.8 | 1017.5 | 1016.9 | 1016.5 | 1015.9 | 1017.1 | 1016.7 | 1017.3 | 1018.1 | 1019.5 | 1020.9 | 1018.0 | 37 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 48.6 | 51.4 | 58.3 | 66.0 | 73.4 | 79.3 | 82.4 | 81.4 | 77.1 | 67.6 | 59.0 | 51.4 | 66.5 | 39 |
| Mean daily maximum | 58.1 | 61.4 | 68.4 | 76.0 | 82.7 | 87.7 | 90.5 | 89.1 | 84.9 | 77.0 | 69.2 | 61.2 | 75.7 | 39 |
| Mean daily minimum | 38.5 | 41.0 | 47.8 | 55.5 | 63.7 | 70.4 | 73.9 | 73.2 | 68.8 | 57.7 | 48.3 | 41.0 | 56.8 | 39 |
| Extreme (highest) | 83 | 85 | 91 | 94 | 97 | 106 | 106 | 102 | 98 | 94 | 88 | 82 | 106 | 39 |
| Extreme (lowest) | 5 | 16 | 21 | 32 | 41 | 51 | 62 | 57 | 45 | 31 | 19 | 11 | 5 | 39 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 79.2 | 62.9 | 50.1 | 44.2 | 40.5 | 34.3 | 46.1 | 42.0 | 48.1 | 55.9 | 70.1 | 83.6 | 55.0 | 38 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 22.6 | 22.1 | 21.9 | 24.0 | 16.8 | 11.5 | 6.4 | 8.5 | 14.3 | 26.2 | 26.5 | 25.3 | 18.9 | 38 |
| Percent of time scattered | 19.8 | 19.0 | 22.2 | 26.3 | 25.3 | 27.1 | 24.2 | 25.5 | 31.8 | 25.2 | 24.4 | 22.0 | 24.4 | 38 |
| Percent of time broken | 16.0 | 14.7 | 19.3 | 19.2 | 26.9 | 28.5 | 34.9 | 32.1 | 24.3 | 15.3 | 18.3 | 13.9 | 21.9 | 38 |
| Percent of time overcast | 37.0 | 35.5 | 30.5 | 22.8 | 20.7 | 20.0 | 18.5 | 19.0 | 20.6 | 23.2 | 23.2 | 29.6 | 25.1 | 38 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 3.8 | 3.2 | 3.9 | 2.8 | 3.6 | 5.5 | 6.3 | 7.2 | 4.9 | 3.1 | 2.4 | 3.0 | 50.0 | 39 |
| Greatest amount | 8.8 | 6.6 | 8.9 | 7.1 | 10.5 | 13.5 | 19.1 | 18.0 | 13.4 | 20.4 | 7.7 | 6.3 | 67.6 | 39 |
| Least amount | 0.7 | 0.2 | 0.5 | 0.1 | 0.4 | 0.9 | 1.4 | 1.1 | 0.5 | 0.0 | 0.3 | 0.1 | 33.3 | 39 |
| Maximum amount (24 hours) | 3.4 | 2.4 | 2.7 | 4.8 | 4.4 | 5.4 | 4.7 | 6.1 | 5.8 | 7.9 | 6.8 | 3.0 | 7.9 | 39 |
| Mean number of days | 14 | 12 | 13 | 9 | 12 | 14 | 17 | 15 | 13 | 9 | 10 | 12 | 150 | 30 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 0.1 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 39 |
| Greatest amount | 2.0 | 6.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.5 | 6.5 | 39 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39 |
| Maximum amount (24 hours) | 1.0 | 6.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.5 | 6.4 | 39 |
| Mean number of days | 1.0 | 1.0 | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | 2.0 | 30 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.24 | 38 |
| Mean wind speed (knots) | 5.4 | 6.0 | 6.2 | 6.1 | 5.4 | 5.1 | 4.7 | 4.2 | 4.4 | 4.7 | 4.8 | 5.1 | 5.2 | 38 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 6.0 | 5.2 | 3.4 | 3.1 | 3.7 | 3.6 | 2.1 | 4.3 | 7.0 | 8.6 | 7.1 | 6.9 | 5.1 | 38 |
| North Northeast | 8.3 | 6.5 | 4.5 | 3.3 | 4.8 | 5.4 | 3.2 | 6.2 | 12.6 | 13.9 | 9.2 | 8.9 | 7.3 | 38 |
| Northeast | 6.2 | 6.3 | 4.8 | 3.3 | 3.8 | 5.4 | 3.2 | 5.7 | 9.9 | 10.6 | 7.1 | 6.0 | 6.0 | 38 |
| East Northeast | 3.1 | 4.7 | 4.4 | 3.2 | 3.9 | 4.1 | 2.7 | 4.0 | 6.8 | 5.8 | 4.4 | 3.3 | 4.2 | 38 |
| East | 2.3 | 3.0 | 4.5 | 4.7 | 5.0 | 4.7 | 3.6 | 4.6 | 5.6 | 4.5 | 2.9 | 2.1 | 4.0 | 38 |
| East Southeast | 2.3 | 2.6 | 3.8 | 4.6 | 4.9 | 5.1 | 3.5 | 4.1 | 4.6 | 3.3 | 2.5 | 1.6 | 3.6 | 38 |
| Southeast | 1.8 | 2.0 | 3.9 | 4.7 | 5.0 | 4.6 | 3.7 | 3.8 | 3.5 | 1.8 | 2.3 | 1.8 | 3.2 | 38 |
| South Southeast | 2.5 | 4.0 | 6.0 | 7.3 | 7.6 | 6.4 | 6.3 | 5.6 | 3.6 | 2.4 | 2.9 | 2.5 | 4.7 | 38 |
| South | 4.5 | 6.8 | 9.2 | 10.8 | 10.5 | 9.8 | 10.9 | 8.4 | 4.8 | 3.4 | 4.6 | 4.8 | 7.4 | 38 |
| South Southwest | 5.0 | 6.3 | 7.5 | 8.5 | 8.7 | 8.5 | 11.2 | 7.7 | 3.9 | 2.9 | 4.6 | 5.7 | 6.7 | 38 |
| Southwest | 5.3 | 5.5 | 5.5 | 6.7 | 6.5 | 7.7 | 11.2 | 7.8 | 3.3 | 2.9 | 3.7 | 5.2 | 5.9 | 38 |
| West Southwest | 7.3 | 6.5 | 5.8 | 7.3 | 6.5 | 7.8 | 10.4 | 7.2 | 3.3 | 3.6 | 4.4 | 5.8 | 6.3 | 38 |
| West | 9.4 | 8.6 | 7.6 | 7.2 | 5.4 | 5.6 | 6.7 | 4.8 | 2.8 | 4.0 | 6.5 | 7.8 | 6.4 | 38 |
| West Northwest | 7.9 | 8.1 | 7.0 | 6.1 | 4.2 | 3.3 | 3.3 | 2.4 | 2.3 | 3.7 | 6.2 | 7.4 | 5.2 | 38 |
| Northwest | 5.5 | 5.6 | 5.3 | 3.3 | 2.7 | 2.1 | 1.6 | 2.1 | 2.3 | 3.4 | 4.4 | 6.4 | 3.7 | 38 |
| North Northwest | 4.8 | 4.5 | 3.6 | 3.0 | 3.1 | 2.5 | 1.6 | 2.4 | 3.3 | 5.0 | 5.3 | 4.8 | 3.7 | 38 |
| Calm | 17.6 | 14.0 | 13.2 | 12.8 | 13.7 | 13.3 | 14.7 | 18.9 | 20.3 | 20.1 | 21.8 | 19.0 | 16.7 | 38 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 6.2 | 6.6 | 6.5 | 6.9 | 6.0 | 4.9 | 4.2 | 4.4 | 5.3 | 5.8 | 5.9 | 5.9 | 5.8 | 38 |
| North Northeast | 6.5 | 7.1 | 6.8 | 6.4 | 6.4 | 5.4 | 4.9 | 5.1 | 6.2 | 6.7 | 6.5 | 6.5 | 6.3 | 38 |
| Northeast | 6.6 | 7.0 | 6.8 | 6.1 | 6.3 | 6.1 | 5.1 | 5.5 | 6.5 | 6.7 | 6.2 | 6.3 | 6.3 | 38 |
| East Northeast | 5.9 | 6.7 | 6.9 | 6.5 | 6.3 | 6.0 | 5.6 | 5.6 | 5.9 | 6.2 | 5.6 | 6.1 | 6.1 | 38 |
| East | 5.1 | 5.8 | 6.3 | 6.6 | 6.7 | 6.4 | 5.3 | 5.6 | 5.8 | 5.4 | 5.3 | 4.9 | 5.9 | 38 |
| East Southeast | 4.8 | 5.3 | 6.2 | 7.0 | 6.7 | 6.7 | 6.0 | 5.6 | 5.9 | 5.8 | 5.2 | 4.8 | 6.0 | 38 |
| Southeast | 4.7 | 5.4 | 6.5 | 6.6 | 6.4 | 6.1 | 5.9 | 5.3 | 5.5 | 5.1 | 5.2 | 4.5 | 5.8 | 38 |
| South Southeast | 5.8 | 6.1 | 6.9 | 6.9 | 6.7 | 6.6 | 6.1 | 5.6 | 5.4 | 5.5 | 5.2 | 5.2 | 6.2 | 38 |
| South | 6.1 | 6.6 | 7.2 | 7.2 | 6.5 | 6.1 | 5.9 | 5.5 | 4.9 | 5.4 | 5.9 | 6.0 | 6.2 | 38 |
| South Southwest | 6.3 | 6.9 | 7.3 | 7.3 | 6.3 | 5.9 | 5.7 | 5.5 | 4.9 | 5.3 | 6.6 | 6.4 | 6.3 | 38 |
| Southwest | 6.1 | 6.2 | 6.5 | 6.3 | 6.0 | 5.8 | 5.4 | 5.0 | 5.0 | 5.1 | 5.8 | 6.0 | 5.8 | 38 |
| West Southwest | 6.8 | 7.2 | 7.1 | 7.1 | 5.9 | 5.9 | 5.4 | 4.8 | 4.6 | 5.0 | 5.8 | 5.7 | 6.0 | 38 |
| West | 7.5 | 8.2 | 8.2 | 7.8 | 6.1 | 5.6 | 5.4 | 4.6 | 4.4 | 5.9 | 7.2 | 7.1 | 6.8 | 38 |
| West Northwest | 7.9 | 8.4 | 8.5 | 8.1 | 6.5 | 5.3 | 4.9 | 4.7 | 4.6 | 5.8 | 7.2 | 7.4 | 7.1 | 38 |
| Northwest | 6.8 | 7.3 | 7.4 | 7.0 | 5.3 | 4.8 | 4.6 | 4.4 | 4.8 | 5.2 | 6.4 | 6.8 | 6.3 | 38 |
| North Northwest | 5.8 | 6.6 | 6.7 | 6.3 | 5.6 | 4.9 | 4.1 | 4.4 | 4.5 | 5.3 | 5.3 | 5.7 | 5.6 | 38 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 19 | 16 | 20 | 18 | 21 | 21 | 21 | 24 | 24 | 20 | 20 | 18 | 242 | 30 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| SAVANNAH, GA (32°08'N, 81°12'W) 49 feet (14.9 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1020.7 | 1019.5 | 1017.7 | 1016.9 | 1016.5 | 1016.1 | 1017.3 | 1016.8 | 1017.1 | 1018.2 | 1019.9 | 1021.2 | 1018.2 | 46 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 49.5 | 52.7 | 59.2 | 66.2 | 73.6 | 79.3 | 82.2 | 81.3 | 77.0 | 67.6 | 58.4 | 51.6 | 66.6 | 47 |
| Mean daily maximum | 60.1 | 63.7 | 70.4 | 77.7 | 84.3 | 89.1 | 91.6 | 90.2 | 85.8 | 78.0 | 69.7 | 62.4 | 76.9 | 47 |
| Mean daily minimum | 38.4 | 41.2 | 47.6 | 54.1 | 62.4 | 69.1 | 72.2 | 71.8 | 67.7 | 56.8 | 46.7 | 40.2 | 55.7 | 47 |
| Extreme (highest) | 84 | 86 | 91 | 95 | 100 | 104 | 105 | 104 | 98 | 97 | 89 | 83 | 105 | 47 |
| Extreme (lowest) | 3 | 14 | 20 | 32 | 39 | 51 | 61 | 57 | 43 | 28 | 15 | 9 | 3 | 47 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 81.5 | 69.6 | 52.4 | 44.1 | 40.3 | 35.7 | 47.9 | 42.8 | 45.6 | 57.0 | 74.3 | 87.1 | 56.6 | 47 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 29.4 | 28.6 | 28.6 | 32.7 | 25.0 | 18.4 | 14.6 | 17.6 | 21.6 | 36.8 | 35.3 | 30.0 | 26.6 | 46 |
| Percent of time scattered | 13.1 | 13.8 | 15.2 | 19.0 | 22.9 | 23.7 | 25.0 | 26.2 | 21.5 | 16.5 | 15.4 | 14.1 | 18.8 | 46 |
| Percent of time broken | 12.5 | 13.0 | 14.6 | 15.9 | 20.6 | 25.7 | 27.9 | 26.6 | 21.9 | 14.9 | 13.8 | 14.0 | 18.4 | 46 |
| Percent of time overcast | 41.0 | 39.9 | 36.8 | 27.9 | 26.0 | 25.8 | 24.7 | 23.0 | 28.7 | 27.6 | 30.8 | 37.7 | 30.8 | 46 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 3.5 | 3.0 | 3.8 | 3.1 | 4.1 | 5.5 | 6.8 | 7.1 | 5.0 | 3.0 | 2.2 | 2.7 | 50.1 | 47 |
| Greatest amount | 8.9 | 7.9 | 9.5 | 10.5 | 10.0 | 14.3 | 20.1 | 17.0 | 13.4 | 19.8 | 5.2 | 5.8 | 73.1 | 47 |
| Least amount | 0.4 | 0.2 | 0.1 | 0.3 | 0.5 | 0.8 | 1.3 | 1.0 | 0.3 | 0.0 | 0.1 | 0.1 | 32.8 | 47 |
| Maximum amount (24 hours) | 3.2 | 3.4 | 3.5 | 5.6 | 4.2 | 3.8 | 3.7 | 7.0 | 6.7 | 7.1 | 3.6 | 3.3 | 7.1 | 47 |
| Mean number of days | 13 | 12 | 12 | 9 | 12 | 14 | 17 | 16 | 14 | 10 | 10 | 12 | 151 | 47 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 0.1 | 0.4 | 45 |
| Greatest amount | 2.0 | 3.6 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 3.6 | 4.6 | 45 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 45 |
| Maximum amount (24 hours) | 1.3 | 3.6 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 3.2 | 3.6 | 45 |
| Mean number of days | 1.0 | Miss | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | Miss | 1.0 | 47 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 | 0.10 | 47 |
| Mean wind speed (knots) | 7.4 | 7.9 | 8.0 | 7.4 | 6.6 | 6.4 | 6.1 | 5.7 | 6.2 | 6.5 | 6.5 | 6.9 | 6.8 | 47 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 5.1 | 4.0 | 2.9 | 2.6 | 3.5 | 3.6 | 2.5 | 4.6 | 6.9 | 7.9 | 6.2 | 5.5 | 4.6 | 47 |
| North Northeast | 5.4 | 4.7 | 3.1 | 2.5 | 3.9 | 4.9 | 3.1 | 6.5 | 11.0 | 12.4 | 7.9 | 6.3 | 6.0 | 47 |
| Northeast | 7.6 | 7.4 | 5.2 | 3.6 | 4.6 | 6.1 | 4.4 | 6.8 | 13.9 | 14.1 | 8.6 | 8.7 | 7.6 | 47 |
| East Northeast | 5.2 | 5.7 | 5.0 | 4.1 | 4.8 | 5.1 | 3.9 | 5.1 | 8.4 | 7.8 | 5.8 | 4.8 | 5.5 | 47 |
| East | 3.3 | 3.9 | 5.0 | 5.0 | 5.5 | 5.1 | 3.7 | 4.4 | 5.8 | 5.0 | 4.1 | 3.3 | 4.5 | 47 |
| East Southeast | 3.4 | 3.7 | 5.0 | 5.7 | 5.4 | 5.3 | 3.9 | 4.1 | 5.1 | 3.5 | 3.6 | 3.1 | 4.3 | 47 |
| Southeast | 2.5 | 3.3 | 4.6 | 6.3 | 6.1 | 6.4 | 5.1 | 5.7 | 4.7 | 3.1 | 3.1 | 2.4 | 4.4 | 47 |
| South Southeast | 2.8 | 3.9 | 6.1 | 8.2 | 8.6 | 7.1 | 6.9 | 6.8 | 4.3 | 2.6 | 3.4 | 3.3 | 5.3 | 47 |
| South | 4.9 | 6.3 | 8.2 | 8.4 | 8.1 | 7.3 | 9.0 | 7.2 | 4.1 | 2.9 | 4.5 | 5.0 | 6.3 | 47 |
| South Southwest | 4.8 | 4.9 | 5.8 | 6.4 | 7.0 | 7.3 | 10.7 | 7.3 | 3.8 | 2.5 | 4.0 | 4.5 | 5.7 | 47 |
| Southwest | 6.5 | 7.1 | 6.8 | 7.9 | 8.0 | 9.3 | 12.6 | 9.4 | 4.0 | 3.5 | 5.1 | 5.7 | 7.2 | 47 |
| West Southwest | 7.7 | 7.7 | 7.9 | 8.4 | 6.9 | 8.1 | 10.0 | 6.8 | 3.8 | 4.2 | 5.9 | 7.6 | 7.1 | 47 |
| West | 9.2 | 8.7 | 8.5 | 7.0 | 6.1 | 6.2 | 6.7 | 4.9 | 3.1 | 4.3 | 6.9 | 8.6 | 6.7 | 47 |
| West Northwest | 11.0 | 9.8 | 9.3 | 7.4 | 5.7 | 4.3 | 4.4 | 3.6 | 3.2 | 4.9 | 8.0 | 9.3 | 6.7 | 47 |
| Northwest | 8.0 | 7.7 | 6.4 | 4.8 | 3.8 | 3.4 | 2.6 | 3.0 | 3.1 | 5.1 | 6.6 | 7.1 | 5.1 | 47 |
| North Northwest | 5.0 | 4.4 | 3.5 | 3.1 | 3.1 | 2.6 | 2.1 | 3.3 | 3.8 | 5.5 | 5.4 | 5.2 | 3.9 | 47 |
| Calm | 7.7 | 6.9 | 6.7 | 8.6 | 8.8 | 8.2 | 8.5 | 10.5 | 11.1 | 10.8 | 10.7 | 9.5 | 9.0 | 47 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 7.0 | 7.3 | 7.4 | 7.2 | 6.7 | 6.1 | 5.7 | 5.6 | 5.8 | 6.8 | 6.5 | 6.8 | 6.5 | 47 |
| North Northeast | 7.3 | 7.9 | 7.9 | 7.2 | 7.3 | 6.8 | 6.1 | 6.6 | 7.4 | 8.1 | 7.6 | 7.5 | 7.4 | 47 |
| Northeast | 8.0 | 8.6 | 8.1 | 7.8 | 7.8 | 7.1 | 6.8 | 7.3 | 8.3 | 8.3 | 7.8 | 8.0 | 7.9 | 47 |
| East Northeast | 7.6 | 8.5 | 8.5 | 7.9 | 7.8 | 7.7 | 7.3 | 7.0 | 7.8 | 7.9 | 7.6 | 7.2 | 7.7 | 47 |
| East | 6.8 | 7.8 | 8.1 | 8.2 | 8.1 | 8.1 | 7.7 | 7.2 | 7.6 | 7.3 | 6.7 | 6.6 | 7.6 | 47 |
| East Southeast | 6.5 | 7.6 | 8.1 | 8.2 | 8.1 | 7.8 | 7.4 | 7.5 | 7.6 | 7.3 | 6.5 | 6.3 | 7.5 | 47 |
| Southeast | 6.4 | 7.0 | 7.7 | 7.9 | 7.5 | 7.3 | 7.1 | 6.6 | 6.7 | 6.5 | 6.5 | 6.0 | 7.1 | 47 |
| South Southeast | 7.0 | 8.1 | 8.7 | 8.4 | 7.7 | 7.2 | 7.2 | 6.9 | 6.6 | 6.5 | 6.9 | 7.0 | 7.5 | 47 |
| South | 7.6 | 8.3 | 8.6 | 8.1 | 7.2 | 6.7 | 6.6 | 6.1 | 6.1 | 6.5 | 7.2 | 7.8 | 7.3 | 47 |
| South Southwest | 7.5 | 7.4 | 7.7 | 7.5 | 6.6 | 6.3 | 6.3 | 5.7 | 5.8 | 6.1 | 6.9 | 7.2 | 6.7 | 47 |
| Southwest | 7.7 | 7.7 | 8.0 | 7.4 | 6.5 | 6.4 | 6.2 | 5.8 | 5.8 | 6.0 | 6.8 | 6.9 | 6.7 | 47 |
| West Southwest | 8.1 | 8.7 | 8.6 | 8.1 | 7.0 | 6.9 | 6.5 | 6.0 | 5.8 | 6.3 | 7.3 | 7.5 | 7.3 | 47 |
| West | 9.0 | 9.5 | 9.8 | 9.0 | 7.6 | 7.3 | 7.0 | 6.2 | 6.2 | 7.0 | 8.1 | 8.2 | 8.2 | 47 |
| West Northwest | 10.3 | 10.3 | 10.4 | 9.5 | 7.5 | 7.5 | 6.8 | 6.2 | 6.5 | 7.4 | 8.7 | 9.2 | 8.9 | 47 |
| Northwest | 8.5 | 9.1 | 9.2 | 8.2 | 6.8 | 6.1 | 6.1 | 5.8 | 5.9 | 6.7 | 7.6 | 8.1 | 7.7 | 47 |
| North Northwest | 7.2 | 7.6 | 7.7 | 7.3 | 6.4 | 5.5 | 5.6 | 5.3 | 5.4 | 6.3 | 6.2 | 6.9 | 6.5 | 47 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 14 | 12 | 14 | 12 | 15 | 15 | 14 | 18 | 19 | 15 | 14 | 14 | 176 | 47 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| JACKSONVILLE, FL (32°19'N, 90°05'W) 295 feet (90 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1021.0 | 1019.8 | 1018.1 | 1017.5 | 1016.7 | 1016.4 | 1017.8 | 1017.0 | 1016.5 | 1017.7 | 1019.6 | 1021.1 | 1018.3 | 49 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 54.1 | 56.8 | 62.4 | 68.4 | 75.1 | 80.3 | 82.7 | 82.0 | 78.9 | 70.6 | 62.1 | 55.8 | 69.2 | 50 |
| Mean daily maximum | 64.9 | 67.9 | 73.7 | 79.9 | 85.9 | 89.8 | 92.1 | 90.9 | 87.3 | 80.1 | 72.8 | 66.6 | 79.4 | 50 |
| Mean daily minimum | 42.7 | 45.3 | 50.6 | 56.4 | 63.9 | 70.2 | 72.9 | 72.7 | 70.1 | 60.7 | 50.8 | 44.5 | 58.5 | 50 |
| Extreme (highest) | 84.0 | 88.0 | 91.0 | 95.0 | 100.0 | 103.0 | 103.0 | 102.0 | 98.0 | 96.0 | 88.0 | 84.0 | 103.0 | 50 |
| Extreme (lowest) | 7 | 19 | 23 | 34 | 45 | 47 | 61 | 63 | 48 | 36 | 21 | 11 | 7 | 50 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 84.9 | 73.4 | 55.6 | 50.0 | 41.5 | 39.4 | 52.9 | 44.9 | 40.1 | 51.6 | 71.1 | 85.8 | 57.6 | 50 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 27.0 | 28.4 | 27.1 | 30.6 | 23.1 | 14.0 | 11.4 | 12.7 | 14.8 | 27.9 | 30.3 | 26.7 | 22.8 | 48 |
| Percent of time scattered | 15.8 | 15.8 | 17.6 | 20.9 | 24.7 | 24.4 | 26.0 | 26.1 | 24.3 | 20.1 | 17.3 | 15.9 | 20.7 | 48 |
| Percent of time broken | 16.4 | 16.3 | 19.0 | 20.1 | 26.3 | 31.0 | 33.6 | 32.1 | 27.6 | 20.1 | 18.3 | 16.8 | 23.1 | 48 |
| Percent of time overcast | 35.8 | 33.7 | 31.0 | 22.7 | 19.9 | 22.3 | 20.7 | 20.8 | 25.3 | 26.4 | 27.9 | 35.1 | 26.8 | 48 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 3.2 | 3.4 | 3.8 | 3.0 | 3.5 | 5.7 | 6.4 | 7.3 | 7.6 | 4.2 | 2.0 | 2.6 | 53.2 | 50 |
| Greatest amount | 10.2 | 8.8 | 10.1 | 11.6 | 10.4 | 13.9 | 16.2 | 16.2 | 19.3 | 13.4 | 5.0 | 9.7 | 79.6 | 50 |
| Least amount | 0.0 | 0.5 | 0.7 | 0.1 | 0.1 | 1.5 | 1.9 | 2.1 | 1.0 | 0.2 | T | 0.0 | 31.2 | 50 |
| Maximum amount (24 hours) | 2.9 | 4.9 | 7.1 | 7.3 | 5.4 | 5.9 | 7.2 | 7.8 | 10.1 | 7.8 | 2.7 | 2.8 | 10.1 | 50 |
| Mean number of days | 12 | 11 | 12 | 9 | 12 | 16 | 18 | 18 | 16 | 12 | 10 | 12 | 158 | 50 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 50 |
| Greatest amount | T | 1.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 1.5 | 50 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| Maximum amount (24 hours) | T | 1.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 1.5 | 50 |
| Mean number of days | Miss | Miss | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | 1.0 | 50 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.05 | 0.02 | 0.00 | 0.00 | 0.10 | 50 |
| Mean wind speed (knots) | 7.0 | 7.7 | 7.8 | 7.4 | 6.9 | 6.6 | 6.0 | 5.8 | 6.4 | 6.9 | 6.7 | 6.7 | 6.8 | 50 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 7.4 | 5.3 | 3.9 | 3.1 | 3.1 | 3.0 | 2.0 | 3.7 | 6.7 | 10.5 | 8.7 | 8.1 | 5.4 | 50 |
| North Northeast | 6.4 | 6.0 | 3.4 | 2.3 | 2.7 | 2.7 | 1.5 | 2.9 | 5.9 | 9.9 | 7.7 | 6.9 | 4.9 | 50 |
| Northeast | 7.5 | 7.9 | 6.5 | 5.1 | 5.5 | 5.3 | 2.9 | 5.1 | 10.8 | 12.9 | 8.8 | 7.7 | 7.2 | 50 |
| East Northeast | 4.3 | 4.8 | 4.9 | 4.8 | 5.5 | 5.9 | 3.4 | 6.2 | 9.3 | 7.0 | 4.9 | 3.9 | 5.4 | 50 |
| East | 3.0 | 3.2 | 4.2 | 5.0 | 5.8 | 6.0 | 4.0 | 5.9 | 7.3 | 5.0 | 3.3 | 2.7 | 4.6 | 50 |
| East Southeast | 2.6 | 3.5 | 4.9 | 7.3 | 7.5 | 6.5 | 5.2 | 6.1 | 6.2 | 3.8 | 2.9 | 2.4 | 4.9 | 50 |
| Southeast | 3.5 | 4.2 | 7.0 | 8.7 | 9.6 | 7.5 | 8.4 | 8.0 | 6.3 | 3.5 | 4.0 | 3.7 | 6.2 | 50 |
| South Southeast | 3.0 | 3.3 | 4.5 | 5.1 | 5.8 | 4.8 | 5.4 | 4.5 | 3.4 | 1.8 | 2.4 | 2.9 | 3.9 | 50 |
| South | 4.5 | 5.1 | 5.8 | 5.6 | 5.7 | 6.4 | 8.3 | 6.4 | 3.8 | 2.2 | 3.8 | 4.5 | 5.2 | 50 |
| South Southwest | 4.4 | 4.8 | 5.2 | 4.4 | 4.9 | 5.9 | 8.2 | 5.7 | 3.0 | 1.8 | 3.2 | 3.9 | 4.6 | 50 |
| Southwest | 6.2 | 7.3 | 7.5 | 8.4 | 7.5 | 10.6 | 12.7 | 9.6 | 4.7 | 2.9 | 4.7 | 5.4 | 7.3 | 50 |
| West Southwest | 6.0 | 7.6 | 8.3 | 8.1 | 8.0 | 8.8 | 10.3 | 6.8 | 3.8 | 3.2 | 4.7 | 5.4 | 6.7 | 50 |
| West | 7.2 | 7.0 | 6.9 | 6.5 | 6.1 | 6.5 | 7.4 | 5.4 | 3.4 | 4.1 | 5.9 | 6.1 | 6.0 | 50 |
| West Northwest | 8.9 | 8.0 | 6.8 | 6.2 | 4.7 | 4.2 | 4.0 | 4.2 | 3.2 | 4.9 | 6.6 | 7.8 | 5.8 | 50 |
| Northwest | 9.8 | 8.6 | 7.5 | 6.4 | 4.7 | 3.9 | 4.0 | 4.4 | 4.8 | 7.6 | 9.6 | 10.2 | 6.8 | 50 |
| North Northwest | 6.8 | 5.6 | 4.4 | 3.6 | 3.3 | 2.5 | 2.1 | 3.1 | 5.2 | 8.2 | 7.8 | 7.9 | 5.0 | 50 |
| Calm | 8.6 | 7.7 | 8.4 | 9.6 | 9.8 | 9.4 | 10.0 | 12.0 | 12.3 | 10.6 | 10.9 | 10.4 | 10.0 | 50 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 6.8 | 7.1 | 6.8 | 6.4 | 6.1 | 5.5 | 5.3 | 5.3 | 6.4 | 7.0 | 7.0 | 6.9 | 6.6 | 50 |
| North Northeast | 8.4 | 9.2 | 8.4 | 7.3 | 7.2 | 6.8 | 5.8 | 5.9 | 8.2 | 8.9 | 8.6 | 8.9 | 8.3 | 50 |
| Northeast | 8.8 | 9.9 | 9.6 | 9.6 | 9.2 | 9.1 | 8.2 | 8.0 | 9.3 | 10.2 | 9.4 | 8.8 | 9.3 | 50 |
| East Northeast | 7.1 | 8.1 | 8.4 | 8.8 | 9.4 | 9.4 | 8.1 | 8.4 | 9.2 | 9.3 | 8.2 | 7.2 | 8.6 | 50 |
| East | 6.7 | 7.4 | 8.3 | 8.6 | 9.1 | 9.4 | 8.4 | 8.6 | 8.8 | 8.8 | 7.3 | 6.3 | 8.4 | 50 |
| East Southeast | 6.3 | 7.8 | 8.6 | 9.5 | 9.2 | 9.3 | 8.8 | 8.3 | 8.5 | 8.6 | 7.6 | 6.5 | 8.6 | 50 |
| Southeast | 6.5 | 7.8 | 8.6 | 8.7 | 8.5 | 8.2 | 7.8 | 7.5 | 7.1 | 7.0 | 7.0 | 6.7 | 7.8 | 50 |
| South Southeast | 6.9 | 8.0 | 8.3 | 7.5 | 7.2 | 6.6 | 6.4 | 6.2 | 6.2 | 6.4 | 6.8 | 6.7 | 7.0 | 50 |
| South | 7.3 | 8.1 | 8.3 | 7.5 | 6.7 | 6.3 | 6.0 | 5.8 | 6.1 | 6.8 | 7.3 | 7.7 | 6.9 | 50 |
| South Southwest | 7.8 | 8.6 | 8.5 | 7.9 | 6.6 | 6.3 | 6.0 | 5.9 | 6.0 | 6.5 | 7.4 | 7.9 | 7.0 | 50 |
| Southwest | 7.5 | 8.1 | 8.6 | 8.0 | 6.8 | 6.5 | 6.3 | 6.2 | 5.7 | 6.2 | 7.2 | 7.4 | 7.0 | 50 |
| West Southwest | 7.7 | 8.5 | 8.8 | 7.9 | 7.0 | 6.8 | 6.4 | 6.1 | 5.8 | 6.2 | 7.0 | 7.2 | 7.2 | 50 |
| West | 7.7 | 8.4 | 8.6 | 7.5 | 6.8 | 6.7 | 6.5 | 5.6 | 5.4 | 6.1 | 7.2 | 7.0 | 7.1 | 50 |
| West Northwest | 8.7 | 9.2 | 9.4 | 8.3 | 6.7 | 6.6 | 6.1 | 5.4 | 5.4 | 6.2 | 7.4 | 7.9 | 7.6 | 50 |
| Northwest | 8.0 | 8.4 | 8.5 | 7.8 | 6.4 | 6.2 | 5.8 | 5.6 | 5.4 | 6.0 | 6.9 | 7.4 | 7.1 | 50 |
| North Northwest | 7.2 | 7.1 | 7.3 | 7.0 | 6.3 | 5.5 | 5.3 | 5.5 | 5.7 | 6.3 | 6.8 | 7.0 | 6.6 | 50 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 17 | 14 | 15 | 13 | 14 | 13 | 11 | 15 | 16 | 17 | 16 | 17 | 178 | 50 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

**DAYTONA BEACH, FL (29°11'N, 81°04'W) 62 feet (19 m)**

| WEATHER ELEMENTS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR | YEARS OF RECORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1020.7 | 1019.5 | 1018.0 | 1017.3 | 1016.7 | 1016.4 | 1018.1 | 1016.8 | 1016.0 | 1016.8 | 1018.9 | 1020.6 | 1018.0 | 49 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 58.3 | 60.1 | 64.5 | 69.4 | 75.2 | 79.6 | 81.4 | 81.2 | 79.6 | 73.7 | 65.9 | 60.2 | 70.8 | 50 |
| Mean daily maximum | 68.7 | 70.4 | 74.8 | 79.6 | 84.8 | 88.2 | 90.0 | 89.3 | 87.0 | 81.5 | 75.4 | 70.2 | 80.0 | 50 |
| Mean daily minimum | 47.4 | 49.3 | 53.7 | 58.7 | 65.0 | 70.5 | 72.3 | 72.7 | 71.8 | 65.3 | 56.0 | 49.6 | 61.1 | 50 |
| Extreme (highest) | 87.0 | 89.0 | 92.0 | 96.0 | 100.0 | 101.0 | 102.0 | 100.0 | 96.0 | 95.0 | 89.0 | 88.0 | 102.0 | 50 |
| Extreme (lowest) | 15 | 24 | 26 | 35 | 44 | 52 | 60 | 65 | 52 | 41 | 27 | 19 | 15 | 50 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 82.3 | 70.1 | 55.3 | 48.2 | 42.5 | 38.8 | 56.5 | 42.9 | 34.9 | 43.1 | 64.1 | 81.4 | 55.0 | 50 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 29.1 | 28.5 | 29.2 | 32.1 | 26.1 | 16.0 | 16.8 | 14.7 | 13.8 | 22.9 | 29.4 | 27.6 | 23.9 | 47 |
| Percent of time scattered | 17.6 | 17.9 | 19.0 | 21.0 | 27.0 | 25.5 | 27.4 | 27.1 | 27.4 | 25.1 | 22.0 | 18.4 | 23.0 | 47 |
| Percent of time broken | 15.9 | 16.6 | 17.6 | 19.4 | 22.2 | 25.9 | 27.7 | 29.2 | 24.9 | 21.2 | 17.6 | 18.1 | 21.4 | 47 |
| Percent of time overcast | 31.7 | 31.6 | 29.0 | 21.9 | 18.4 | 24.2 | 20.6 | 20.9 | 26.3 | 24.8 | 25.5 | 30.0 | 25.4 | 47 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 2.6 | 2.8 | 3.4 | 2.5 | 3.1 | 6.0 | 5.5 | 6.3 | 6.6 | 4.9 | 2.6 | 2.4 | 49.2 | 50 |
| Greatest amount | 7.1 | 9.1 | 12.1 | 7.1 | 12.3 | 15.1 | 14.4 | 19.8 | 15.2 | 13 | 12.9 | 11.9 | 79.2 | 50 |
| Least amount | 0.1 | 0.4 | 0.2 | T | 0.0 | 1.0 | 0.1 | 2.0 | 0.4 | 0.1 | T | 0.0 | 31.3 | 50 |
| Maximum amount (24 hours) | 5.6 | 3.5 | 4.9 | 4 | 4.0 | 6.0 | 3.3 | 4.4 | 6.1 | 9.1 | 8.9 | 3.6 | 9.1 | 50 |
| Mean number of days | 12 | 11 | 12 | 9 | 12 | 17 | 18 | 18 | 17 | 15 | 11 | 12 | 164 | 50 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | T | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | T | 48 |
| Greatest amount | T | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | T | 48 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 48 |
| Maximum amount (24 hours) | T | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | T | 50 |
| Mean number of days | Miss | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | Miss | 50 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.03 | 0.01 | 0.00 | 0.02 | 0.11 | 50 |
| Mean wind speed (knots) | 7.7 | 8.3 | 8.5 | 8.2 | 7.7 | 6.9 | 6.3 | 6.0 | 6.9 | 7.8 | 7.4 | 7.3 | 7.4 | 50 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 8.7 | 8.2 | 5.3 | 3.2 | 2.7 | 1.8 | 1.1 | 2.0 | 3.7 | 6.9 | 7.6 | 7.6 | 4.9 | 50 |
| North Northeast | 5.2 | 6.2 | 5.3 | 4.7 | 4.1 | 3.1 | 1.4 | 2.8 | 5.6 | 8.6 | 6.3 | 5.3 | 4.9 | 50 |
| Northeast | 3.4 | 4.0 | 4.4 | 4.9 | 5.7 | 4.8 | 2.7 | 4.9 | 9.1 | 11.1 | 5.5 | 3.7 | 5.4 | 50 |
| East Northeast | 3.4 | 4.2 | 5.0 | 6.7 | 8.7 | 8.5 | 5.6 | 7.9 | 13.6 | 12.1 | 6.7 | 4.3 | 7.2 | 50 |
| East | 3.6 | 4.4 | 5.9 | 9.0 | 11.0 | 10.7 | 9.6 | 9.7 | 11.5 | 8.3 | 5.6 | 4.4 | 7.8 | 50 |
| East Southeast | 3.9 | 4.7 | 7.1 | 10.0 | 11.2 | 8.2 | 9.3 | 8.9 | 8.0 | 4.7 | 4.7 | 3.7 | 7.0 | 50 |
| Southeast | 3.9 | 4.6 | 6.9 | 8.0 | 7.5 | 6.0 | 7.7 | 6.2 | 4.6 | 2.9 | 3.7 | 3.4 | 5.4 | 50 |
| South Southeast | 3.3 | 3.5 | 4.2 | 3.9 | 4.3 | 4.5 | 5.3 | 4.0 | 3.0 | 1.9 | 2.6 | 2.9 | 3.6 | 50 |
| South | 4.7 | 5.2 | 6.0 | 5.3 | 5.7 | 7.3 | 9.0 | 7.1 | 4.1 | 2.5 | 3.9 | 4.7 | 5.5 | 50 |
| South Southwest | 4.7 | 5.5 | 5.7 | 5.0 | 5.4 | 7.5 | 9.0 | 7.2 | 3.6 | 1.9 | 3.4 | 4.5 | 5.3 | 50 |
| Southwest | 5.3 | 5.8 | 6.6 | 6.1 | 6.7 | 8.8 | 10.0 | 7.6 | 4.1 | 3.1 | 4.0 | 4.7 | 6.1 | 50 |
| West Southwest | 7.2 | 7.7 | 8.4 | 8.7 | 6.3 | 8.4 | 8.0 | 5.8 | 4.0 | 4.0 | 4.9 | 5.6 | 6.6 | 50 |
| West | 7.2 | 7.3 | 6.5 | 5.3 | 4.3 | 4.4 | 4.3 | 4.0 | 3.1 | 4.0 | 5.4 | 6.2 | 5.2 | 50 |
| West Northwest | 8.5 | 6.6 | 5.5 | 4.3 | 3.1 | 3.0 | 2.7 | 3.0 | 3.3 | 5.5 | 7.1 | 9.0 | 5.1 | 50 |
| Northwest | 10.4 | 7.8 | 6.0 | 4.2 | 2.6 | 2.2 | 1.7 | 2.7 | 3.2 | 7.4 | 10.5 | 11.1 | 5.8 | 50 |
| North Northwest | 8.0 | 7.0 | 3.9 | 2.6 | 1.7 | 1.6 | 1.1 | 1.6 | 2.2 | 5.1 | 7.2 | 8.3 | 4.2 | 50 |
| Calm | 8.7 | 7.4 | 7.1 | 8.1 | 9.0 | 9.3 | 11.3 | 14.7 | 13.4 | 9.9 | 11.0 | 10.6 | 10.0 | 50 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 9.8 | 10.2 | 10.6 | 10.6 | 10.1 | 8.0 | 6.9 | 7.1 | 9.1 | 10.5 | 10.7 | 9.9 | 10.0 | 50 |
| North Northeast | 9.4 | 9.6 | 10.2 | 10.8 | 10.6 | 9.9 | 8.8 | 9.0 | 9.9 | 10.8 | 10.3 | 9.2 | 10.0 | 50 |
| Northeast | 8.0 | 8.5 | 8.8 | 9.6 | 9.9 | 9.4 | 8.5 | 8.9 | 9.9 | 10.6 | 9.2 | 8.1 | 9.4 | 50 |
| East Northeast | 8.1 | 8.7 | 8.9 | 9.3 | 9.8 | 9.3 | 8.6 | 8.8 | 9.6 | 10.2 | 9.3 | 8.4 | 9.3 | 50 |
| East | 8.1 | 9.0 | 9.3 | 10.0 | 10.1 | 9.4 | 9.2 | 8.8 | 9.0 | 9.2 | 8.7 | 8.2 | 9.2 | 50 |
| East Southeast | 8.2 | 8.7 | 9.6 | 10.4 | 9.6 | 9.2 | 8.8 | 8.2 | 8.4 | 8.2 | 8.3 | 8.0 | 8.9 | 50 |
| Southeast | 7.6 | 8.0 | 8.7 | 8.5 | 7.9 | 7.1 | 6.9 | 6.6 | 6.5 | 7.2 | 7.2 | 7.6 | 7.5 | 50 |
| South Southeast | 7.6 | 8.7 | 8.4 | 7.2 | 6.3 | 5.9 | 5.8 | 5.9 | 6.2 | 6.7 | 7.1 | 7.5 | 6.8 | 50 |
| South | 7.8 | 8.4 | 8.5 | 7.4 | 6.4 | 5.8 | 5.7 | 5.5 | 6.1 | 6.5 | 7.0 | 7.7 | 6.8 | 50 |
| South Southwest | 8.8 | 9.1 | 9.2 | 8.3 | 6.9 | 6.1 | 6.0 | 6.1 | 6.4 | 6.8 | 8.1 | 8.5 | 7.4 | 50 |
| Southwest | 8.2 | 8.7 | 8.9 | 8.1 | 6.8 | 6.4 | 6.2 | 6.1 | 6.1 | 6.1 | 7.2 | 7.8 | 7.2 | 50 |
| West Southwest | 8.4 | 9.1 | 9.6 | 8.5 | 7.3 | 7.0 | 6.5 | 6.1 | 5.9 | 6.4 | 7.1 | 7.6 | 7.7 | 50 |
| West | 8.6 | 9.5 | 9.7 | 8.7 | 7.6 | 7.2 | 6.9 | 6.3 | 6.0 | 6.9 | 7.3 | 7.9 | 8.0 | 50 |
| West Northwest | 8.3 | 8.7 | 8.6 | 8.0 | 6.8 | 6.4 | 6.7 | 5.8 | 5.4 | 6.4 | 7.4 | 7.5 | 7.4 | 50 |
| Northwest | 7.6 | 7.7 | 7.9 | 7.2 | 6.2 | 5.5 | 5.6 | 5.1 | 5.5 | 6.4 | 7.2 | 7.4 | 7.0 | 50 |
| North Northwest | 8.9 | 9.4 | 9.1 | 8.2 | 8.2 | 6.7 | 5.9 | 5.4 | 7.4 | 8.5 | 8.9 | 8.6 | 8.5 | 50 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 15 | 12 | 12 | 10 | 11 | 10 | 9 | 10 | 9 | 10 | 12 | 15 | 135 | 50 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| WEST PALM BEACH, FL (26°41'N, 80°07'W) 23 feet (7 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1019.9 | 1019.0 | 1017.7 | 1016.8 | 1016.2 | 1016.2 | 1018.0 | 1016.4 | 1015.1 | 1015.3 | 1017.6 | 1019.5 | 1017.3 | 48 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 66.2 | 67.3 | 70.6 | 74.1 | 78.2 | 81.1 | 82.8 | 82.9 | 81.9 | 78.1 | 72.5 | 67.9 | 75.3 | 50 |
| Mean daily maximum | 74.9 | 76.3 | 79.3 | 82.4 | 85.9 | 88.6 | 90.3 | 90.5 | 88.7 | 84.9 | 80.0 | 76.2 | 83.2 | 50 |
| Mean daily minimum | 56.9 | 57.9 | 61.4 | 65.4 | 70.0 | 73.1 | 74.7 | 74.9 | 74.5 | 70.8 | 64.5 | 59.0 | 67.0 | 50 |
| Extreme (highest) | 87 | 90 | 94 | 99 | 96 | 98 | 99 | 98 | 96 | 95 | 91 | 88 | 99 | 50 |
| Extreme (lowest) | 27 | 32 | 30 | 43 | 51 | 61 | 68 | 65 | 67 | 46 | 36 | 28 | 27 | 50 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 74.5 | 64.7 | 51.9 | 42.9 | 37.2 | 37.4 | 55.4 | 39.4 | 25.9 | 27.7 | 51.3 | 70.2 | 48.3 | 49 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 22.7 | 22.3 | 22.3 | 20.6 | 17.4 | 10.2 | 10.6 | 9.5 | 6.0 | 12.7 | 17.5 | 20.4 | 16.1 | 44 |
| Percent of time scattered | 25.4 | 25.9 | 25.9 | 27.9 | 29.7 | 24.8 | 29.9 | 28.5 | 28.5 | 30.2 | 28.0 | 25.5 | 27.5 | 44 |
| Percent of time broken | 23.3 | 23.4 | 24.5 | 26.3 | 25.6 | 30.0 | 32.7 | 34.3 | 33.5 | 30.3 | 27.2 | 24.7 | 28.0 | 44 |
| Percent of time overcast | 22.0 | 21.2 | 20.7 | 19.1 | 20.7 | 26.1 | 17.8 | 19.0 | 22.7 | 20.3 | 20.1 | 22.6 | 21.0 | 44 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 3.0 | 2.5 | 3.4 | 3.5 | 5.4 | 7.7 | 5.9 | 6.6 | 8.8 | 6.9 | 4.0 | 2.7 | 60.9 | 50 |
| Greatest amount | 11.0 | 8.7 | 16.7 | 12.6 | 15.2 | 17.9 | 13.2 | 20.1 | 24.8 | 18.7 | 14.6 | 11.6 | 85.8 | 50 |
| Least amount | 0.2 | 0.2 | 0.3 | 0.0 | 0.3 | 1.0 | 1.2 | 1.7 | 1.7 | 0.5 | 0.2 | 0.0 | 37.3 | 50 |
| Maximum amount (24 hours) | 6.7 | 2.9 | 5.5 | 6.4 | 7.0 | 4.8 | 5.2 | 8.0 | 5.7 | 7.1 | 7.4 | 6.4 | 8.0 | 50 |
| Mean number of days | 12 | 11 | 12 | 10 | 15 | 18 | 18 | 21 | 21 | 17 | 13 | 12 | 180 | 50 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 49 |
| Greatest amount | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 49 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 49 |
| Maximum amount (24 hours) | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | T | 50 |
| Mean number of days | Miss | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | Miss | 50 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.04 | 0.02 | 0.01 | 0.00 | 0.13 | 49 |
| Mean wind speed (knots) | 8.8 | 9.2 | 9.6 | 9.6 | 8.8 | 7.3 | 6.8 | 6.8 | 7.4 | 8.9 | 9.2 | 8.8 | 8.4 | 49 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 4.6 | 4.4 | 3.4 | 3.0 | 2.2 | 2.0 | 1.6 | 2.0 | 3.2 | 4.5 | 4.9 | 4.7 | 3.4 | 49 |
| North Northeast | 2.0 | 2.1 | 2.4 | 2.5 | 1.9 | 1.4 | 1.2 | 1.5 | 2.8 | 4.8 | 3.4 | 2.2 | 2.4 | 49 |
| Northeast | 2.9 | 3.3 | 3.8 | 4.7 | 5.0 | 3.5 | 1.7 | 3.1 | 6.5 | 11.2 | 6.6 | 4.1 | 4.7 | 49 |
| East Northeast | 5.8 | 5.9 | 5.9 | 8.5 | 10.4 | 6.6 | 4.4 | 6.4 | 12.1 | 16.4 | 13.0 | 8.1 | 8.6 | 49 |
| East | 9.0 | 7.5 | 7.9 | 12.0 | 12.5 | 9.3 | 10.3 | 11.9 | 14.3 | 12.0 | 12.8 | 10.4 | 10.9 | 49 |
| East Southeast | 6.5 | 6.8 | 8.9 | 12.3 | 15.7 | 13.3 | 16.4 | 15.2 | 12.6 | 6.8 | 6.5 | 7.1 | 10.7 | 49 |
| Southeast | 7.8 | 8.8 | 12.4 | 12.5 | 13.3 | 12.2 | 14.7 | 11.3 | 7.7 | 4.8 | 5.6 | 6.6 | 9.8 | 49 |
| South Southeast | 6.5 | 7.9 | 9.5 | 7.3 | 6.2 | 7.1 | 7.1 | 6.2 | 3.9 | 2.8 | 3.5 | 5.1 | 6.1 | 49 |
| South | 5.0 | 5.7 | 5.7 | 4.5 | 4.4 | 7.1 | 6.2 | 5.2 | 4.1 | 3.0 | 2.9 | 4.1 | 4.8 | 49 |
| South Southwest | 3.6 | 3.8 | 4.1 | 3.1 | 3.8 | 5.5 | 4.9 | 4.3 | 3.4 | 2.2 | 2.5 | 3.1 | 3.7 | 49 |
| Southwest | 3.5 | 4.3 | 4.2 | 4.1 | 4.2 | 6.4 | 5.1 | 4.9 | 3.4 | 2.3 | 2.5 | 3.0 | 4.0 | 49 |
| West Southwest | 4.0 | 4.5 | 4.5 | 4.3 | 4.1 | 4.8 | 4.0 | 3.8 | 3.0 | 2.7 | 2.6 | 2.9 | 3.8 | 49 |
| West | 4.6 | 5.0 | 4.8 | 4.0 | 3.2 | 3.6 | 3.6 | 3.5 | 3.0 | 2.8 | 3.1 | 3.6 | 3.7 | 49 |
| West Northwest | 7.1 | 7.2 | 5.2 | 4.2 | 3.0 | 3.0 | 3.1 | 3.2 | 3.2 | 4.0 | 4.4 | 6.1 | 4.5 | 49 |
| Northwest | 11.6 | 10.1 | 6.7 | 4.7 | 2.8 | 2.4 | 2.6 | 3.0 | 3.5 | 6.7 | 10.3 | 12.2 | 6.4 | 49 |
| North Northwest | 9.8 | 8.0 | 6.1 | 3.8 | 2.4 | 2.3 | 1.8 | 2.6 | 3.2 | 6.0 | 9.7 | 10.9 | 5.5 | 49 |
| Calm | 5.7 | 4.7 | 4.4 | 4.5 | 5.1 | 9.5 | 11.4 | 11.8 | 10.0 | 6.9 | 5.8 | 5.9 | 7.2 | 49 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 9.0 | 9.2 | 9.3 | 9.0 | 7.7 | 5.6 | 5.1 | 5.3 | 6.6 | 8.4 | 9.2 | 8.8 | 8.2 | 49 |
| North Northeast | 9.8 | 9.9 | 10.3 | 10.8 | 10.0 | 7.7 | 6.6 | 7.4 | 8.8 | 10.6 | 11.2 | 9.8 | 9.8 | 49 |
| Northeast | 10.4 | 10.6 | 11.2 | 11.2 | 11.0 | 10.0 | 8.0 | 8.7 | 10.0 | 11.9 | 11.7 | 10.8 | 10.8 | 49 |
| East Northeast | 11.6 | 12.0 | 11.9 | 12.0 | 11.3 | 10.3 | 9.0 | 9.8 | 10.0 | 12.0 | 12.4 | 12.1 | 11.4 | 49 |
| East | 11.4 | 11.5 | 11.9 | 11.6 | 10.8 | 9.8 | 9.4 | 9.4 | 9.6 | 10.9 | 11.9 | 11.6 | 10.8 | 49 |
| East Southeast | 9.8 | 10.3 | 10.5 | 11.0 | 10.2 | 9.3 | 9.2 | 8.8 | 9.0 | 9.0 | 10.0 | 10.1 | 9.7 | 49 |
| Southeast | 9.9 | 10.8 | 10.8 | 10.6 | 9.8 | 8.9 | 8.7 | 8.4 | 8.4 | 8.7 | 9.5 | 9.6 | 9.6 | 49 |
| South Southeast | 9.8 | 10.8 | 11.2 | 10.7 | 9.0 | 8.3 | 7.7 | 7.7 | 7.9 | 8.6 | 9.4 | 9.6 | 9.4 | 49 |
| South | 8.1 | 8.4 | 8.7 | 7.9 | 6.7 | 6.7 | 5.9 | 6.2 | 6.7 | 6.9 | 7.5 | 7.5 | 7.2 | 49 |
| South Southwest | 8.1 | 8.6 | 8.2 | 7.7 | 6.4 | 6.7 | 5.9 | 5.8 | 6.8 | 7.2 | 7.2 | 7.9 | 7.1 | 49 |
| Southwest | 7.9 | 8.3 | 8.6 | 8.2 | 6.8 | 6.7 | 5.8 | 5.8 | 6.4 | 6.5 | 7.3 | 7.4 | 7.1 | 49 |
| West Southwest | 7.7 | 8.0 | 8.8 | 8.3 | 7.3 | 7.1 | 6.1 | 6.0 | 6.3 | 6.7 | 6.9 | 7.0 | 7.3 | 49 |
| West | 7.8 | 8.8 | 8.8 | 8.0 | 6.8 | 6.2 | 6.0 | 6.0 | 5.7 | 6.2 | 6.4 | 7.3 | 7.2 | 49 |
| West Northwest | 8.9 | 9.1 | 9.5 | 8.2 | 6.8 | 5.8 | 5.8 | 5.5 | 5.4 | 7.0 | 7.3 | 8.1 | 7.7 | 49 |
| Northwest | 9.0 | 9.0 | 9.3 | 8.0 | 6.6 | 5.2 | 5.1 | 5.3 | 5.4 | 7.6 | 8.6 | 8.8 | 8.1 | 49 |
| North Northwest | 8.6 | 8.6 | 8.7 | 8.3 | 6.6 | 5.5 | 5.1 | 5.1 | 5.5 | 7.7 | 8.4 | 8.7 | 7.9 | 49 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 7 | 6 | 6 | 5 | 3 | 4 | 2 | 3 | 3 | 4 | 5 | 7 | 55 | 50 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| MIAMI, FL (25°48'N, 80°18'W) 10 feet (3 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1019.7 | 1019.0 | 1017.6 | 1017.0 | 1015.9 | 1016.3 | 1017.9 | 1016.5 | 1014.9 | 1015.1 | 1017.4 | 1019.3 | 1017.2 | 49 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 67.8 | 69.0 | 72.1 | 75.5 | 79.0 | 81.7 | 83.1 | 83.3 | 82.2 | 78.7 | 73.7 | 69.3 | 76.3 | 50 |
| Mean daily maximum | 75.6 | 76.8 | 79.6 | 82.6 | 85.7 | 88.1 | 89.4 | 89.7 | 88.2 | 84.8 | 80.4 | 76.8 | 83.2 | 50 |
| Mean daily minimum | 59.5 | 60.7 | 64.1 | 67.8 | 71.9 | 74.8 | 76.3 | 76.5 | 75.7 | 72.0 | 66.4 | 61.4 | 69.0 | 50 |
| Extreme (highest) | 88 | 89 | 92 | 96 | 96 | 98 | 98 | 98 | 97 | 95 | 89 | 87 | 98 | 50 |
| Extreme (lowest) | 30 | 35 | 32 | 42 | 55 | 60 | 69 | 68 | 68 | 53 | 39 | 30 | 30 | 50 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 72.2 | 64.5 | 51.1 | 44.6 | 33.6 | 37.7 | 53.9 | 39.8 | 24.0 | 25.6 | 48.7 | 68.1 | 46.9 | 50 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 21.2 | 22.1 | 19.5 | 17.9 | 12.8 | 6.6 | 5.3 | 5.1 | 4.1 | 11.2 | 15.3 | 19.3 | 13.4 | 49 |
| Percent of time scattered | 32.7 | 31.3 | 34.0 | 35.7 | 34.9 | 30.3 | 33.8 | 33.3 | 31.9 | 36.0 | 34.8 | 33.0 | 33.5 | 49 |
| Percent of time broken | 23.3 | 24.4 | 26.5 | 28.3 | 30.0 | 33.8 | 38.4 | 39.4 | 37.1 | 30.0 | 27.9 | 25.0 | 30.4 | 49 |
| Percent of time overcast | 15.6 | 15.3 | 13.3 | 11.5 | 14.0 | 17.9 | 12.5 | 11.9 | 16.1 | 14.9 | 14.3 | 15.0 | 14.3 | 49 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 2.0 | 2.0 | 2.4 | 3.2 | 6.0 | 8.9 | 6.0 | 7.6 | 8.5 | 6.9 | 3.0 | 1.8 | 58.8 | 50 |
| Greatest amount | 6.6 | 8.0 | 10.5 | 11.7 | 18.5 | 22.3 | 11.2 | 16.6 | 24.4 | 21.6 | 13.8 | 6.3 | 89.3 | 50 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 2.0 | 1.7 | 1.6 | 2.6 | 1.2 | 0.0 | 0.1 | 37.0 | 50 |
| Maximum amount (24 hours) | 2.4 | 4.5 | 7.0 | 9.3 | 11.5 | 6.6 | 4.5 | 6.5 | 6.0 | 9.9 | 7.5 | 4.3 | 11.5 | 50 |
| Mean number of days | 12 | 10 | 10 | 10 | 15 | 20 | 21 | 22 | 22 | 18 | 14 | 11 | 185 | 50 |
| **SNOW** | | | | | | | | | | | | | | |
| Mean amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| Greatest amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| Least amount | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| Maximum amount (24 hours) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| Mean number of days | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.15 | 0.01 | 0.00 | 0.00 | 0.14 | 50 |
| Mean wind speed (knots) | 8.2 | 8.7 | 9.1 | 9.1 | 8.2 | 7.1 | 6.9 | 6.8 | 7.1 | 8.0 | 8.4 | 8.1 | 8.0 | 50 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 9.5 | 7.6 | 5.7 | 4.3 | 3.3 | 4.1 | 4.2 | 5.4 | 5.9 | 9.1 | 11.0 | 11.2 | 6.8 | 50 |
| North Northeast | 4.0 | 3.7 | 3.2 | 2.7 | 2.4 | 2.8 | 2.7 | 3.6 | 4.9 | 6.7 | 6.2 | 4.8 | 4.0 | 50 |
| Northeast | 4.2 | 4.0 | 3.7 | 4.5 | 4.6 | 3.9 | 2.9 | 3.9 | 6.7 | 11.5 | 8.5 | 5.6 | 5.4 | 50 |
| East Northeast | 6.1 | 5.9 | 6.2 | 8.5 | 10.1 | 6.5 | 5.9 | 7.9 | 11.1 | 14.1 | 11.8 | 8.0 | 8.5 | 50 |
| East | 8.7 | 7.7 | 9.1 | 12.9 | 14.3 | 11.9 | 13.3 | 12.6 | 14.2 | 10.6 | 11.0 | 10.2 | 11.4 | 50 |
| East Southeast | 11.0 | 10.9 | 12.5 | 15.0 | 16.3 | 14.3 | 18.1 | 14.4 | 12.9 | 7.9 | 9.3 | 10.2 | 12.7 | 50 |
| Southeast | 8.5 | 10.5 | 12.7 | 12.3 | 12.5 | 13.2 | 14.7 | 12.3 | 8.8 | 5.6 | 5.8 | 7.4 | 10.3 | 50 |
| South Southeast | 5.8 | 7.4 | 9.8 | 7.7 | 7.3 | 8.4 | 7.5 | 6.8 | 5.5 | 3.9 | 3.7 | 4.7 | 6.5 | 50 |
| South | 4.0 | 4.7 | 5.3 | 4.1 | 4.3 | 6.2 | 5.4 | 4.9 | 4.1 | 2.7 | 2.5 | 3.0 | 4.3 | 50 |
| South Southwest | 2.6 | 2.8 | 3.0 | 2.7 | 3.0 | 4.7 | 3.6 | 3.8 | 3.3 | 1.8 | 1.7 | 2.1 | 2.9 | 50 |
| Southwest | 2.4 | 2.8 | 3.0 | 2.9 | 3.7 | 4.9 | 3.6 | 3.8 | 2.6 | 1.9 | 1.9 | 2.0 | 3.0 | 50 |
| West Southwest | 2.6 | 3.1 | 3.3 | 3.6 | 3.5 | 3.7 | 2.8 | 2.8 | 2.4 | 2.2 | 1.8 | 2.0 | 2.8 | 50 |
| West | 2.6 | 3.1 | 3.3 | 3.2 | 2.8 | 2.8 | 2.2 | 2.4 | 2.1 | 2.0 | 1.7 | 2.0 | 2.5 | 50 |
| West Northwest | 3.9 | 5.0 | 4.0 | 3.7 | 2.7 | 2.2 | 2.2 | 2.4 | 2.2 | 2.9 | 2.8 | 3.5 | 3.1 | 50 |
| Northwest | 8.3 | 8.2 | 5.5 | 4.6 | 3.0 | 2.7 | 3.0 | 3.4 | 3.5 | 5.1 | 6.2 | 7.1 | 5.0 | 50 |
| North Northwest | 12.5 | 9.8 | 7.3 | 5.1 | 3.1 | 3.3 | 3.2 | 4.0 | 4.8 | 8.6 | 11.4 | 13.2 | 7.2 | 50 |
| Calm | 3.2 | 2.9 | 2.4 | 2.0 | 3.0 | 4.5 | 4.7 | 5.7 | 5.0 | 3.4 | 2.6 | 3.3 | 3.6 | 50 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 7.5 | 7.6 | 7.8 | 7.1 | 5.9 | 4.9 | 4.7 | 4.9 | 5.1 | 6.5 | 7.6 | 7.7 | 6.7 | 50 |
| North Northeast | 7.1 | 7.4 | 7.8 | 7.7 | 7.1 | 5.3 | 4.5 | 5.2 | 5.9 | 8.0 | 7.7 | 7.2 | 6.9 | 50 |
| Northeast | 9.2 | 8.8 | 10.0 | 10.6 | 9.1 | 7.6 | 5.7 | 6.5 | 7.9 | 10.5 | 10.2 | 9.5 | 9.1 | 50 |
| East Northeast | 9.8 | 10.0 | 10.6 | 11.0 | 10.0 | 8.8 | 8.0 | 8.4 | 8.9 | 10.2 | 10.8 | 9.9 | 9.8 | 50 |
| East | 9.0 | 9.4 | 10.0 | 10.3 | 9.7 | 8.4 | 8.2 | 8.3 | 8.5 | 9.0 | 9.6 | 9.6 | 9.1 | 50 |
| East Southeast | 9.5 | 9.9 | 10.1 | 10.2 | 9.4 | 8.6 | 8.5 | 8.4 | 8.4 | 8.5 | 9.2 | 9.2 | 9.1 | 50 |
| Southeast | 9.0 | 9.8 | 10.0 | 9.9 | 9.1 | 8.5 | 8.4 | 8.3 | 8.1 | 7.9 | 8.5 | 8.2 | 8.9 | 50 |
| South Southeast | 8.6 | 9.5 | 10.2 | 9.8 | 8.6 | 7.8 | 7.8 | 8.0 | 7.9 | 7.8 | 8.3 | 8.1 | 8.7 | 50 |
| South | 7.9 | 9.0 | 9.2 | 8.6 | 7.3 | 7.0 | 6.6 | 6.7 | 7.0 | 7.2 | 7.2 | 7.4 | 7.6 | 50 |
| South Southwest | 8.5 | 8.6 | 8.6 | 7.8 | 6.3 | 6.8 | 5.8 | 6.3 | 6.8 | 7.1 | 6.7 | 7.6 | 7.2 | 50 |
| Southwest | 7.8 | 8.5 | 8.2 | 7.7 | 6.6 | 6.4 | 5.7 | 5.8 | 6.4 | 6.6 | 6.9 | 7.0 | 6.9 | 50 |
| West Southwest | 8.5 | 8.7 | 8.9 | 8.6 | 7.2 | 6.8 | 5.9 | 6.2 | 6.7 | 7.1 | 7.2 | 7.1 | 7.5 | 50 |
| West | 7.8 | 8.0 | 8.6 | 8.2 | 6.9 | 5.7 | 5.7 | 5.7 | 5.7 | 6.1 | 6.3 | 6.5 | 6.9 | 50 |
| West Northwest | 8.3 | 8.8 | 8.7 | 7.6 | 6.2 | 5.5 | 5.3 | 5.6 | 5.5 | 6.8 | 7.1 | 7.5 | 7.2 | 50 |
| Northwest | 8.4 | 8.6 | 8.8 | 7.5 | 5.8 | 5.1 | 4.7 | 4.8 | 5.2 | 6.6 | 7.2 | 7.9 | 7.2 | 50 |
| North Northwest | 7.9 | 8.2 | 8.0 | 7.4 | 5.7 | 4.9 | 4.8 | 5.1 | 5.1 | 6.7 | 7.8 | 7.8 | 7.2 | 50 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 7 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | 2 | 4 | 5 | 6 | 44 | 50 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

| KEY WEST, FL (24°33'N, 88°39'W) 20 feet (6 m) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **YEAR** | **YEARS OF RECORD** |
| **SEA LEVEL PRESSURE*** | | | | | | | | | | | | | | |
| Mean (millibars) | 1019.5 | 1018.6 | 1017.2 | 1016.3 | 1015.6 | 1015.8 | 1017.5 | 1016.1 | 1014.4 | 1014.7 | 1016.8 | 1018.9 | 1016.8 | 44 |
| **TEMPERATURE (°F)** | | | | | | | | | | | | | | |
| Mean | 70.2 | 71.0 | 74.1 | 77.2 | 80.7 | 83.4 | 84.7 | 84.6 | 83.5 | 80.3 | 75.9 | 71.6 | 78.1 | 46 |
| Mean daily maximum | 74.9 | 75.8 | 78.8 | 81.8 | 85.2 | 87.9 | 89.4 | 89.5 | 88.2 | 84.6 | 80.0 | 76.1 | 82.7 | 46 |
| Mean daily minimum | 64.9 | 65.7 | 68.9 | 72.1 | 75.7 | 78.3 | 79.4 | 79.2 | 78.3 | 75.5 | 71.3 | 66.6 | 73.0 | 46 |
| Extreme (highest) | 86 | 85 | 88 | 90 | 91 | 94 | 95 | 95 | 94 | 93 | 89 | 88 | 95 | 46 |
| Extreme (lowest) | 41 | 45 | 47 | 48 | 64 | 68 | 69 | 68 | 69 | 60 | 49 | 44 | 41 | 46 |
| **RELATIVE HUMIDITY** | | | | | | | | | | | | | | |
| Average percentage | 70.0 | 60.6 | 47.5 | 37.6 | 31.0 | 33.3 | 49.7 | 35.8 | 19.5 | 21.7 | 43.3 | 64.0 | 42.7 | 46 |
| **CLOUD COVER** | | | | | | | | | | | | | | |
| Percent of time clear | 21.7 | 25.0 | 21.0 | 19.1 | 13.3 | 4.4 | 2.4 | 2.0 | 2.1 | 11.2 | 17.6 | 20.7 | 13.3 | 44 |
| Percent of time scattered | 32.2 | 33.6 | 36.1 | 39.0 | 39.5 | 32.9 | 31.1 | 30.5 | 28.3 | 36.9 | 35.3 | 31.7 | 33.9 | 44 |
| Percent of time broken | 23.2 | 23.0 | 23.4 | 24.5 | 27.7 | 33.4 | 40.4 | 41.6 | 40.9 | 28.5 | 25.1 | 24.2 | 29.7 | 44 |
| Percent of time overcast | 16.5 | 13.1 | 13.6 | 12.0 | 12.9 | 20.1 | 15.9 | 15.3 | 18.6 | 15.5 | 14.9 | 16.1 | 15.4 | 44 |
| **PRECIPITATION (inches)** | | | | | | | | | | | | | | |
| Mean amount | 2.2 | 1.5 | 1.7 | 1.9 | 3.2 | 4.8 | 3.6 | 5.0 | 6.4 | 4.8 | 2.4 | 2.0 | 39.9 | 46 |
| Greatest amount | 17.6 | 4.4 | 9.6 | 10.6 | 12.9 | 14.4 | 11.6 | 10.4 | 18.4 | 21.5 | 27.6 | 11.1 | 62.9 | 46 |
| Least amount | T | 0.0 | T | 0.0 | 0.3 | 0.3 | 0.4 | 2.2 | 1.7 | 0.7 | T | 0.0 | 19.9 | 46 |
| Maximum amount (24 hours) | 6.4 | 2.5 | 5.2 | 6.1 | 7.2 | 5.1 | 3.0 | 3.2 | 6.0 | 6.4 | 22.7 | 6.6 | 22.7 | 46 |
| Mean number of days | 11 | 9 | 9 | 8 | 11 | 16 | 17 | 19 | 21 | 16 | 11 | 12 | 160 | 46 |
| **WIND** | | | | | | | | | | | | | | |
| Percentage with gales | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.18 | 0.09 | 0.03 | 0.01 | 0.18 | 45 |
| Mean wind speed (knots) | 10.4 | 10.5 | 10.6 | 10.6 | 9.3 | 8.4 | 8.2 | 8.0 | 8.5 | 9.6 | 10.5 | 10.3 | 9.5 | 45 |
| **Direction (percentage of observations)** | | | | | | | | | | | | | | |
| North | 9.5 | 10.4 | 8.0 | 7.0 | 4.9 | 2.6 | 1.6 | 2.4 | 2.8 | 6.6 | 8.1 | 9.2 | 6.1 | 45 |
| North Northeast | 11.2 | 9.6 | 6.5 | 4.8 | 3.4 | 1.9 | 1.4 | 2.1 | 2.7 | 8.7 | 11.8 | 12.9 | 6.4 | 45 |
| Northeast | 15.7 | 12.0 | 7.5 | 6.0 | 4.4 | 3.2 | 3.0 | 4.5 | 6.7 | 17.3 | 20.2 | 18.6 | 9.9 | 45 |
| East Northeast | 12.0 | 9.2 | 7.1 | 7.8 | 6.5 | 5.0 | 5.6 | 7.6 | 10.8 | 18.7 | 17.3 | 14.3 | 10.2 | 45 |
| East | 9.1 | 8.6 | 9.7 | 12.1 | 12.5 | 10.3 | 11.6 | 11.8 | 12.8 | 11.2 | 9.5 | 9.0 | 10.7 | 45 |
| East Southeast | 10.0 | 11.1 | 14.8 | 18.8 | 20.5 | 18.6 | 23.8 | 19.8 | 18.4 | 10.0 | 9.2 | 9.4 | 15.4 | 45 |
| Southeast | 7.8 | 10.1 | 14.7 | 15.1 | 17.0 | 18.8 | 21.2 | 18.9 | 13.9 | 6.8 | 6.6 | 7.4 | 13.2 | 45 |
| South Southeast | 4.0 | 5.1 | 7.2 | 5.9 | 7.3 | 9.4 | 9.0 | 8.7 | 6.6 | 3.3 | 2.5 | 2.9 | 6.0 | 45 |
| South | 3.6 | 4.1 | 5.4 | 3.8 | 4.7 | 7.9 | 6.3 | 5.8 | 5.5 | 2.7 | 2.1 | 2.8 | 4.6 | 45 |
| South Southwest | 2.3 | 2.3 | 2.6 | 2.1 | 2.5 | 4.8 | 2.9 | 3.1 | 3.4 | 1.8 | 1.2 | 1.3 | 2.5 | 45 |
| Southwest | 2.0 | 1.9 | 2.1 | 2.0 | 2.1 | 4.3 | 2.8 | 3.0 | 2.9 | 1.8 | 1.5 | 1.4 | 2.3 | 45 |
| West Southwest | 1.2 | 1.5 | 1.4 | 1.3 | 1.5 | 2.3 | 1.4 | 1.6 | 2.0 | 1.1 | 0.8 | 1.1 | 1.4 | 45 |
| West | 1.0 | 1.1 | 1.2 | 0.9 | 1.1 | 1.5 | 0.9 | 1.1 | 1.4 | 0.8 | 0.7 | 0.8 | 1.0 | 45 |
| West Northwest | 1.4 | 1.5 | 1.6 | 1.6 | 1.6 | 1.4 | 1.0 | 1.1 | 1.3 | 1.0 | 0.9 | 1.1 | 1.3 | 45 |
| Northwest | 2.4 | 3.4 | 3.0 | 3.3 | 3.1 | 2.0 | 1.4 | 1.8 | 2.0 | 1.9 | 2.1 | 2.1 | 2.4 | 45 |
| North Northwest | 4.9 | 6.0 | 5.1 | 5.5 | 3.8 | 2.0 | 1.2 | 1.8 | 1.8 | 3.1 | 3.2 | 3.5 | 3.5 | 45 |
| Calm | 2.0 | 2.0 | 2.1 | 1.9 | 3.0 | 3.9 | 4.9 | 4.8 | 5.1 | 3.2 | 2.2 | 2.2 | 3.1 | 45 |
| **Direction (mean speed, knots)** | | | | | | | | | | | | | | |
| North | 12.3 | 12.0 | 11.5 | 10.4 | 7.9 | 7.2 | 7.0 | 7.1 | 7.3 | 9.7 | 11.8 | 11.9 | 10.7 | 45 |
| North Northeast | 11.0 | 10.9 | 10.5 | 9.9 | 8.3 | 7.2 | 6.6 | 7.2 | 7.7 | 10.1 | 11.2 | 11.1 | 10.3 | 45 |
| Northeast | 10.2 | 10.2 | 10.3 | 9.7 | 8.8 | 7.2 | 6.4 | 7.1 | 8.0 | 10.5 | 10.9 | 10.4 | 9.9 | 45 |
| East Northeast | 9.8 | 10.0 | 10.5 | 10.8 | 9.7 | 8.4 | 7.3 | 7.6 | 8.3 | 10.5 | 10.5 | 10.2 | 9.7 | 45 |
| East | 10.6 | 10.5 | 11.1 | 12.0 | 11.2 | 9.8 | 9.2 | 8.9 | 9.4 | 10.0 | 10.6 | 10.3 | 10.3 | 45 |
| East Southeast | 10.9 | 10.8 | 11.6 | 12.0 | 11.0 | 9.8 | 9.9 | 9.6 | 9.9 | 9.8 | 10.8 | 10.7 | 10.5 | 45 |
| Southeast | 10.2 | 10.4 | 11.2 | 11.2 | 10.0 | 9.2 | 9.2 | 9.0 | 9.5 | 9.2 | 10.8 | 10.7 | 9.9 | 45 |
| South Southeast | 9.1 | 9.6 | 10.2 | 10.0 | 8.6 | 8.2 | 7.9 | 7.8 | 8.6 | 9.1 | 9.4 | 9.1 | 8.8 | 45 |
| South | 9.5 | 9.6 | 9.3 | 9.1 | 7.9 | 8.6 | 7.5 | 7.6 | 9.0 | 9.9 | 8.6 | 8.9 | 8.6 | 45 |
| South Southwest | 9.1 | 9.6 | 9.3 | 9.2 | 7.4 | 8.7 | 7.4 | 7.1 | 9.3 | 10.1 | 9.7 | 8.4 | 8.7 | 45 |
| Southwest | 8.3 | 8.9 | 8.6 | 8.3 | 7.3 | 7.7 | 7.3 | 7.2 | 8.4 | 9.1 | 8.7 | 8.3 | 8.1 | 45 |
| West Southwest | 7.8 | 8.5 | 9.8 | 8.3 | 7.7 | 7.1 | 6.9 | 7.7 | 7.7 | 8.1 | 7.6 | 7.9 | 7.9 | 45 |
| West | 8.2 | 8.6 | 9.2 | 8.9 | 7.5 | 6.5 | 5.8 | 6.8 | 9.3 | 7.1 | 7.1 | 7.9 | 7.8 | 45 |
| West Northwest | 10.3 | 11.5 | 10.3 | 10.0 | 7.9 | 6.2 | 6.3 | 6.5 | 6.8 | 6.8 | 8.7 | 8.7 | 8.5 | 45 |
| Northwest | 12.3 | 12.4 | 12.2 | 10.1 | 7.7 | 6.1 | 6.7 | 7.0 | 7.6 | 8.1 | 10.3 | 11.9 | 9.7 | 45 |
| North Northwest | 13.4 | 12.9 | 12.5 | 10.8 | 8.1 | 6.8 | 7.6 | 7.1 | 7.6 | 9.7 | 11.9 | 12.6 | 10.9 | 45 |
| **VISIBILITY** | | | | | | | | | | | | | | |
| Mean number of days with fog | 3 | 2 | 1 | Miss | Miss | 1 | Miss | 1 | 1 | 1 | 1 | 2 | 13 | 46 |

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

METEOROLOGICAL TABLES

**COASTAL AREA OFF NORFOLK, VA**
**Between 36°N to 38°N and 73°W to 77°W**

| WEATHER ELEMENTS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wind > 33 knots [1] | 4.0 | 4.3 | 3.7 | 1.8 | 0.5 | 0.4 | 0.2 | 0.4 | 1.1 | 2.0 | 3.1 | 4.1 | 2.1 |
| Wave Height > 9 feet [1] | 7.7 | 7.8 | 6.5 | 3.5 | 1.6 | 1.2 | 0.8 | 1.2 | 2.3 | 4.8 | 5.4 | 8.3 | 4.1 |
| Visibility < 2 nautical miles [1] | 3.8 | 5.1 | 5.3 | 5.4 | 5.7 | 3.6 | 1.7 | 1.5 | 1.7 | 2.2 | 2.7 | 3.3 | 3.5 |
| Precipitation [1] | 8.8 | 8.2 | 6.8 | 5.6 | 4.8 | 4.1 | 4.2 | 4.3 | 5.1 | 5.4 | 6.1 | 7.7 | 5.8 |
| Temperature > 69° F | 0.8 | 0.7 | 1.1 | 3.8 | 15.6 | 62.3 | 96.2 | 96.4 | 75.2 | 22.9 | 5.0 | 1.1 | 32.9 |
| Mean Temperature (°F) | 46.2 | 46.4 | 49.7 | 55.8 | 63.3 | 72.2 | 77.7 | 77.8 | 73.8 | 65.6 | 57.6 | 49.9 | 61.7 |
| Temperature < 33° F [1] | 8.1 | 6.9 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 3.0 | 1.6 |
| Mean RH (%) | 76 | 75 | 76 | 77 | 80 | 82 | 82 | 81 | 79 | 76 | 74 | 74 | 78 |
| Overcast or Obscured [1] | 36.3 | 35.1 | 32.6 | 27.3 | 25.3 | 21.6 | 21.1 | 19.7 | 20.9 | 22.3 | 25.6 | 32.6 | 26.5 |
| Mean Cloud Cover ($8^{ths}$) | 5.0 | 4.8 | 4.6 | 4.2 | 4.3 | 4.3 | 4.4 | 4.3 | 4.2 | 4.1 | 4.4 | 4.9 | 4.4 |
| Mean SLP (mbs) | 1019 | 1018 | 1017 | 1016 | 1016 | 1016 | 1017 | 1017 | 1018 | 1018 | 1018 | 1019 | 1017 |
| Ext. Max. SLP (mbs) | 1047 | 1047 | 1044 | 1040 | 1038 | 1036 | 1038 | 1041 | 1036 | 1044 | 1047 | 1045 | 1047 |
| Ext. Min. SLP (mbs) | 968 | 964 | 967 | 975 | 982 | 989 | 991 | 992 | 986 | 977 | 971 | 975 | 964 |
| Prevailing Wind Direction | N | N | N | SW | SW | SW | SW | SW | NE | N | N | N | N |
| Thunder and Lightning [1] | 0.5 | 0.5 | 0.7 | 0.8 | 1.5 | 1.5 | 2.5 | 2.4 | 1.2 | 0.8 | 0.6 | 0.4 | 1.1 |

**COASTAL AREA OFF CAPE HATTERAS, NC**
**Between 34°N to 36°N and 73°W to 77°W**

| WEATHER ELEMENTS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wind > 33 knots [1] | 6.3 | 6.8 | 5.5 | 3.5 | 1.1 | 0.7 | 0.4 | 0.7 | 1.6 | 3.5 | 3.7 | 5.5 | 3.2 |
| Wave Height > 9 feet [1] | 11.9 | 13.2 | 11.4 | 7.6 | 4.2 | 2.4 | 1.6 | 1.7 | 4.4 | 9.0 | 8.7 | 11.3 | 7.1 |
| Visibility < 2 nautical miles [1] | 2.8 | 2.8 | 2.3 | 1.4 | 1.5 | 1.0 | 0.9 | 1.0 | 0.9 | 0.9 | 1.2 | 1.7 | 1.5 |
| Precipitation [1] | 8.6 | 8.3 | 6.7 | 5.1 | 5.5 | 5.3 | 5.9 | 5.8 | 5.4 | 6.0 | 6.3 | 7.7 | 6.4 |
| Temperature > 69° F | 5.6 | 5.0 | 9.1 | 23.9 | 58.6 | 91.1 | 99.4 | 99.4 | 93.7 | 58.6 | 26.2 | 10.4 | 49.3 |
| Mean Temperature (°F) | 55.4 | 55.6 | 58.6 | 64.3 | 70.9 | 76.5 | 80.3 | 80.4 | 77.5 | 71.0 | 64.5 | 58.6 | 68.0 |
| Temperature < 33° F [1] | 1.5 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.2 |
| Mean RH (%) | 75 | 74 | 74 | 74 | 77 | 80 | 81 | 80 | 77 | 74 | 73 | 74 | 76 |
| Overcast or Obscured [1] | 36.0 | 35.7 | 32.1 | 23.8 | 22.6 | 21.4 | 19.7 | 19.6 | 20.5 | 23.4 | 24.5 | 31.8 | 25.8 |
| Mean Cloud Cover ($8^{ths}$) | 5.4 | 5.2 | 5.0 | 4.3 | 4.5 | 4.6 | 4.7 | 4.6 | 4.6 | 4.7 | 4.7 | 5.2 | 4.8 |
| Mean SLP (mbs) | 1018 | 1018 | 1016 | 1017 | 1016 | 1016 | 1017 | 1017 | 1018 | 1017 | 1018 | 1019 | 1017 |
| Ext. Max. SLP (mbs) | 1047 | 1047 | 1046 | 1039 | 1038 | 1036 | 1036 | 1040 | 1036 | 1043 | 1045 | 1044 | 1047 |
| Ext. Min. SLP (mbs) | 974 | 977 | 973 | 981 | 990 | 988 | 997 | 992 | 990 | 985 | 984 | 987 | 973 |
| Prevailing Wind Direction | N | N | N | SW | SW | SW | SW | SW | NE | N | N | N | N |
| Thunder and Lightning [1] | 0.8 | 1.0 | 1.5 | 1.8 | 2.8 | 3.0 | 4.2 | 3.7 | 2.1 | 1.5 | 1.3 | 0.9 | 2.1 |

**COASTAL AREA OFF CHARLESTON, SC**
**Between 32°N to 34°N and 75°W to 81°W**

| WEATHER ELEMENTS | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wind > 33 knots [1] | 4.3 | 4.8 | 4.1 | 2.0 | 0.9 | 0.5 | 0.3 | 0.6 | 1.3 | 3.1 | 3.1 | 4.0 | 2.4 |
| Wave Height > 9 feet [1] | 8.9 | 9.6 | 8.7 | 4.7 | 3.0 | 2.3 | 1.1 | 1.7 | 4.3 | 7.6 | 7.3 | 7.9 | 5.5 |
| Visibility < 2 nautical miles [1] | 1.4 | 1.5 | 1.1 | 0.6 | 0.8 | 0.6 | 0.8 | 0.9 | 0.8 | 0.8 | 0.8 | 1.0 | 0.9 |
| Precipitation [1] | 7.0 | 6.5 | 6.1 | 3.6 | 4.7 | 5.0 | 5.1 | 6.0 | 5.5 | 5.8 | 5.1 | 6.1 | 5.5 |
| Temperature > 69° F | 11.5 | 11.7 | 18.4 | 40.9 | 79.9 | 98.0 | 99.8 | 99.7 | 98.5 | 77.1 | 42.5 | 18.7 | 59.1 |
| Mean Temperature (°F) | 59.9 | 60.5 | 63.4 | 68.4 | 73.8 | 78.4 | 81.5 | 81.5 | 79.3 | 73.8 | 67.8 | 62.4 | 71.1 |
| Temperature < 33° F [1] | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 |
| Mean RH (%) | 74 | 74 | 73 | 73 | 76 | 80 | 80 | 80 | 77 | 74 | 72 | 72 | 76 |
| Overcast or Obscured [1] | 32.1 | 31.8 | 28.0 | 18.9 | 19.4 | 19.5 | 17.3 | 18.5 | 20.2 | 21.5 | 21.6 | 28.2 | 23.0 |
| Mean Cloud Cover ($8^{ths}$) | 5.2 | 5.1 | 4.8 | 4.0 | 4.3 | 4.5 | 4.6 | 4.7 | 4.7 | 4.6 | 4.6 | 5.0 | 4.7 |
| Mean SLP (mbs) | 1019 | 1018 | 1017 | 1017 | 1017 | 1016 | 1018 | 1017 | 1017 | 1017 | 1018 | 1019 | 1018 |
| Ext. Max. SLP (mbs) | 1045 | 1045 | 1044 | 1040 | 1039 | 1036 | 1037 | 1038 | 1036 | 1042 | 1044 | 1044 | 1045 |
| Ext. Min. SLP (mbs) | 980 | 977 | 980 | 985 | 991 | 995 | 998 | 996 | 995 | 988 | 987 | 983 | 977 |
| Prevailing Wind Direction | N | N | N | SW | SW | SW | SW | SW | NE | NE | N | N | SW |
| Thunder and Lightning [1] | 1.0 | 1.3 | 1.7 | 1.6 | 2.9 | 3.1 | 3.9 | 4.3 | 2.7 | 1.9 | 1.3 | 0.9 | 2.2 |

[1] Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

METEOROLOGICAL TABLES

| COASTAL AREA OFF JACKSONVILLE, FL<br>Between 29°N to 32°N and 78°W to 82°W | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **ANNUAL** |
| Wind > 33 knots [1] | 2.4 | 3.4 | 2.1 | 1.0 | 0.5 | 0.5 | 0.1 | 0.5 | 1.4 | 2.2 | 1.8 | 2.1 | 1.5 |
| Wave Height > 9 feet [1] | 5.9 | 7.1 | 4.6 | 2.6 | 2.1 | 1.4 | 0.6 | 1.2 | 3.8 | 6.1 | 4.5 | 4.5 | 3.7 |
| Visibility < 2 nautical miles [1] | 1.1 | 0.9 | 0.8 | 0.4 | 0.4 | 0.6 | 0.3 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.6 |
| Precipitation [1] | 5.2 | 5.4 | 4.1 | 3.1 | 3.3 | 3.9 | 3.3 | 4.3 | 5.5 | 4.8 | 4.0 | 4.6 | 4.3 |
| Temperature > 69° F | 23.9 | 24.7 | 38.6 | 64.3 | 93.0 | 99.6 | 99.9 | 99.9 | 99.5 | 89.4 | 62.0 | 34.8 | 69.3 |
| Mean Temperature (°F) | 63.7 | 64.6 | 67.5 | 71.7 | 76.2 | 80.1 | 82.5 | 82.4 | 80.9 | 76.3 | 71.0 | 66.4 | 73.6 |
| Temperature < 33° F [1] | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Mean RH (%) | 73 | 73 | 73 | 73 | 75 | 79 | 79 | 79 | 78 | 73 | 71 | 72 | 75 |
| Overcast or Obscured [1] | 26.3 | 24.9 | 20.6 | 15.4 | 12.9 | 15.5 | 11.2 | 13.0 | 17.2 | 17.8 | 16.9 | 22.6 | 17.9 |
| Mean Cloud Cover ($8^{ths}$) | 4.9 | 4.7 | 4.4 | 3.9 | 3.9 | 4.4 | 4.1 | 4.3 | 4.6 | 4.5 | 4.4 | 4.7 | 4.4 |
| Mean SLP (mbs) | 1020 | 1019 | 1018 | 1018 | 1017 | 1016 | 1018 | 1017 | 1016 | 1016 | 1018 | 1020 | 1018 |
| Ext. Max. SLP (mbs) | 1040 | 1045 | 1040 | 1036 | 1037 | 1031 | 1035 | 1034 | 1033 | 1040 | 1046 | 1045 | 1046 |
| Ext. Min. SLP (mbs) | 985 | 990 | 983 | 992 | 996 | 995 | 998 | 997 | 995 | 978 | 994 | 995 | 978 |
| Prevailing Wind Direction | NW | NW | S | S | S | SW | SW | E | NE | NE | N | N | NE |
| Thunder and Lightning [1] | 0.9 | 1.1 | 1.5 | 1.2 | 2.7 | 3.2 | 4.4 | 4.5 | 3.5 | 2.1 | 1.1 | 0.8 | 2.3 |

| COASTAL AREA OFF MIAMI, FL<br>Between 25°N to 29°N and 78°W to 82°W | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **ANNUAL** |
| Wind > 33 knots [1] | 1.1 | 1.5 | 1.0 | 0.4 | 0.1 | 0.2 | 0.1 | 0.2 | 0.7 | 1.3 | 0.8 | 1.1 | 0.7 |
| Wave Height > 9 feet [1] | 3.5 | 4.4 | 3.2 | 1.8 | 1.2 | 0.9 | 0.5 | 0.7 | 1.8 | 4.3 | 3.6 | 3.7 | 2.4 |
| Visibility < 2 nautical miles [1] | 0.4 | 0.4 | 0.3 | 0.5 | 0.4 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 |
| Precipitation [1] | 3.3 | 3.2 | 2.5 | 2.1 | 3.1 | 4.2 | 3.0 | 3.8 | 4.9 | 4.7 | 3.2 | 3.2 | 3.5 |
| Temperature > 69° F | 54.1 | 54.1 | 67.5 | 86.6 | 98.6 | 99.8 | 99.9 | 100.0 | 99.9 | 97.9 | 86.4 | 64.6 | 84.6 |
| Mean Temperature (°F) | 69.7 | 70.0 | 72.0 | 74.8 | 78.1 | 81.2 | 83.1 | 83.4 | 82.3 | 79.2 | 75.1 | 71.5 | 76.8 |
| Temperature < 33° F [1] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Mean RH (%) | 75 | 75 | 75 | 74 | 77 | 79 | 78 | 78 | 79 | 76 | 74 | 74 | 76 |
| Overcast or Obscured [1] | 15.4 | 14.7 | 14.2 | 10.5 | 11.3 | 13.8 | 9.0 | 9.3 | 13.1 | 14.1 | 11.6 | 13.7 | 12.5 |
| Mean Cloud Cover ($8^{ths}$) | 4.3 | 4.2 | 4.1 | 3.8 | 3.9 | 4.3 | 4.1 | 4.2 | 4.5 | 4.4 | 4.2 | 4.2 | 4.2 |
| Mean SLP (mbs) | 1020 | 1019 | 1018 | 1017 | 1016 | 1017 | 1018 | 1017 | 1015 | 1015 | 1018 | 1019 | 1017 |
| Ext. Max. SLP (mbs) | 1040 | 1040 | 1042 | 1040 | 1038 | 1033 | 1033 | 1034 | 1030 | 1037 | 1032 | 1044 | 1044 |
| Ext. Min. SLP (mbs) | 994 | 989 | 994 | 998 | 999 | 999 | 1003 | 1000 | 987 | 996 | 993 | 996 | 987 |
| Prevailing Wind Direction | E | E | E | E | E | E | E | E | E | NE | E | E | E |
| Thunder and Lightning [1] | 0.5 | 0.9 | 1.0 | 1.4 | 2.2 | 3.5 | 4.4 | 4.7 | 4.5 | 2.6 | 1.0 | 0.7 | 2.4 |

| COASTAL AREA OFF KEY WEST, FL<br>Between 23°N to 25°N and 79°W to 83°W | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEATHER ELEMENTS** | **JAN** | **FEB** | **MAR** | **APR** | **MAY** | **JUN** | **JUL** | **AUG** | **SEP** | **OCT** | **NOV** | **DEC** | **ANNUAL** |
| Wind > 33 knots [1] | 0.5 | 0.5 | 0.3 | 0.2 | 0.1 | 0.3 | 0.1 | 0.2 | 0.5 | 0.6 | 0.5 | 0.5 | 0.3 |
| Wave Height > 9 feet [1] | 2.0 | 2.0 | 1.9 | 1.7 | 1.1 | 0.8 | 0.4 | 0.7 | 0.7 | 2.4 | 2.5 | 1.9 | 1.5 |
| Visibility < 2 nautical miles [1] | 0.4 | 0.4 | 0.3 | 0.2 | 0.3 | 0.5 | 0.2 | 0.4 | 0.4 | 0.7 | 0.3 | 0.4 | 0.4 |
| Precipitation [1] | 2.8 | 2.6 | 1.8 | 1.4 | 2.5 | 3.7 | 2.3 | 2.9 | 3.9 | 4.6 | 2.9 | 2.6 | 2.8 |
| Temperature > 69° F | 70.1 | 69.7 | 81.9 | 95.2 | 99.7 | 99.9 | 99.9 | 100.0 | 99.9 | 99.3 | 93.3 | 77.1 | 90.9 |
| Mean Temperature (°F) | 72.2 | 72.4 | 74.3 | 76.8 | 79.7 | 82.2 | 83.7 | 84.0 | 83.2 | 80.5 | 76.9 | 73.5 | 78.5 |
| Temperature < 33° F [1] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean RH (%) | 78 | 78 | 78 | 77 | 78 | 79 | 77 | 77 | 79 | 78 | 77 | 77 | 78 |
| Overcast or Obscured [1] | 12.8 | 11.7 | 9.8 | 7.2 | 9.4 | 12.9 | 6.8 | 7.1 | 10.1 | 12.4 | 10.4 | 12.3 | 10.2 |
| Mean Cloud Cover ($8^{ths}$) | 3.8 | 3.7 | 3.5 | 3.4 | 3.7 | 4.2 | 4.0 | 4.0 | 4.3 | 4.3 | 4.0 | 4.0 | 3.9 |
| Mean SLP (mbs) | 1019 | 1018 | 1017 | 1017 | 1015 | 1016 | 1017 | 1016 | 1014 | 1014 | 1017 | 1019 | 1017 |
| Ext. Max. SLP (mbs) | 1038 | 1036 | 1035 | 1035 | 1031 | 1032 | 1030 | 1029 | 1030 | 1031 | 1034 | 1037 | 1038 |
| Ext. Min. SLP (mbs) | 997 | 1000 | 997 | 998 | 1000 | 997 | 1004 | 1002 | 996 | 991 | 1000 | 1000 | 991 |
| Prevailing Wind Direction | E | E | E | E | E | E | E | E | E | E | E | E | E |
| Thunder and Lightning [1] | 0.5 | 0.7 | 0.5 | 0.6 | 2.0 | 3.0 | 4.8 | 5.0 | 5.9 | 3.2 | 1.2 | 0.6 | 2.4 |

[1] Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

## Atmospheric Pressure Conversion Table

| Inches | Millibars |
|---|---|
| 28.44 | 963 |
| 28.53 | 966 |
| 28.62 | 969 |
| 28.70 | 972 |
| 28.79 | 975 |
| 28.88 | 978 |
| 28.97 | 981 |
| 29.06 | 984 |
| 28.15 | 987 |
| 28.24 | 990 |

| Inches | Millibars |
|---|---|
| 29.32 | 993 |
| 29.41 | 996 |
| 29.50 | 999 |
| 29.59 | 1002 |
| 29.68 | 1005 |
| 29.77 | 1008 |
| 29.86 | 1011 |
| 29.94 | 1014 |
| 30.03 | 1017 |
| 30.12 | 1020 |

| Inches | Millibars |
|---|---|
| 30.21 | 1023 |
| 30.30 | 1026 |
| 30.39 | 1029 |
| 30.48 | 1032 |
| 30.56 | 1035 |
| 30.65 | 1038 |
| 30.74 | 1041 |
| 30.83 | 1044 |
| 30.92 | 1047 |
| 31.01 | 1050 |

## Mean Surface Water Temperatures and Densities

| | | Virginia Beach 36°50'N., 75°58'W. | Diamond Shoal Light, NC 35°09'N., 75°18'W. | Beaufort, NC 34°43'N., 76°40'W. | Southport, NC 33°55'N., 78°01'W. | Myrtle Beach, SC 33°00'N., 78°53'W. | Charleston, SC 32°47'N., 79°55'W. | Fort Pulaski, GA 32°02'N., 80°54'W. | Brunswick, GA 31°08'N., 81°29'W. | Fernandina Beach, FL 30°40'N., 81°28'W. | Mayport, FL 30°24'N., 81°26'W. | Jacksonville, FL 30°21'N., 81°37'W. | Daytona Beach, FL (ocean) 29°14'N., 81°00'W. | Daytona Beach, FL (Halifax River) 29°13'N., 81°01'W. | Cape Canaveral, FL 28°15'N., 80°36'W. | Eau Gallie Beach, FL 28°08'N., 80°35'W. | Miami Beach, FL 25°46'N., 80°08'W. | Marathon Shores, FL 24°43'N., 81°02'W. | Key West, FL 24°33'N., 81°48'W. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years of Record | | 8 | 5 | 4 | 9 | 17 | 27 | 29 | 8 | 25 | 25 | 13 | 20 | 2 | 2 | 16 | 26 | 3 | 38 |
| Jan | Temp (°C) | 5.5 | 16.6 | 9.1 | 10.9 | 9.1 | 10.6 | 10.8 | 12.7 | 13.5 | 14.0 | 14.3 | 16.4 | 18.1 | 17.3 | 18.4 | 21.7 | 22.1 | 21.8 |
| | Density | 20.4 | 26.2 | 21.2 | 15.1 | 25.2 | 12.0 | 11.0 | 16.1 | 21.6 | 17.0 | 6.1 | 25.6 | 16.6 | 26.5 | 26.5 | 26.6 | 26.4 | 26.8 |
| Feb | Temp (°C) | 4.5 | 15.6 | 8.8 | 10.9 | 9.6 | 11.0 | 11.7 | 13.0 | 14.1 | 14.5 | 15.7 | 16.3 | 14.8 | 17.8 | 18.7 | 22.1 | 21.7 | 22.3 |
| | Density | 19.8 | 26.2 | 20.8 | 13.8 | 25.0 | 10.4 | 10.2 | 14.3 | 21.1 | 17.0 | 6.4 | 25.7 | 17.8 | 26.7 | 26.7 | 26.8 | 26.8 | 26.9 |
| Mar | Temp (°C) | 6.4 | 14.8 | 11.3 | 13.1 | 12.6 | 13.9 | 14.7 | 16.1 | 16.7 | 16.8 | 19.1 | 17.8 | 20.1 | 18.9 | 20.1 | 23.3 | 22.8 | 23.8 |
| | Density | 19.4 | 25.6 | 21.6 | 12.5 | 24.4 | 9.1 | 8.3 | 12.9 | 20.5 | 16.6 | 6.8 | 26.2 | 10.0 | 26.0 | 26.8 | 27.0 | 27.5 | 27.1 |
| Apr | Temp (°C) | 10.7 | 16.7 | 17.2 | 17.8 | 17.3 | 18.6 | 19.2 | 20.9 | 20.7 | 20.4 | 23.1 | 21.2 | 25.4 | 21.7 | 22.3 | 25.1 | 25.4 | 25.8 |
| | Density | 19.0 | 25.8 | 22.9 | 13.9 | 24.4 | 9.5 | 8.3 | 14.5 | 21.5 | 19.0 | 7.1 | 26.5 | 9.8 | 27.0 | 27.1 | 27.1 | 28.2 | 27.3 |
| May | Temp (°C) | 15.8 | 21.1 | 21.4 | 22.7 | 22.1 | 23.2 | 23.7 | 24.6 | 24.6 | 24.1 | 26.8 | 24.2 | 27.6 | 25.0 | 24.7 | 27.1 | 27.8 | 27.9 |
| | Density | 18.5 | 26.4 | 24.6 | 16.0 | 24.9 | 10.7 | 10.1 | 16.9 | 23.0 | 21.0 | 10.1 | 26.9 | 13.6 | 27.2 | 27.2 | 27.2 | 28.0 | 27.5 |
| Jun | Temp (°C) | 20.4 | 24.4 | 25.2 | 26.3 | 26.0 | 26.9 | 27.2 | 27.5 | 27.4 | 26.9 | 29.1 | 25.9 | 29.2 | 25.2 | 26.2 | 28.8 | 28.9 | 29.6 |
| | Density | 18.4 | 26.5 | 23.9 | 18.8 | 25.3 | 11.1 | 12.0 | 17.6 | 23.6 | 21.2 | 9.0 | 27.0 | 15.0 | 27.2 | 27.1 | 27.0 | 26.9 | 27.2 |
| Jul | Temp (°C) | 22.8 | 26.2 | 27.4 | 27.9 | 27.9 | 28.6 | 28.8 | 28.8 | 28.4 | 28.0 | 30.6 | 25.7 | 30.1 | 16.1 | 26.0 | 30.1 | 30.4 | 30.4 |
| | Density | 19.6 | 26.4 | 24.5 | 17.4 | 25.8 | 12.2 | 13.0 | 17.5 | 23.4 | 18.7 | 6.3 | 27.0 | 8.8 | 27.3 | 27.1 | 26.9 | 27.1 | 27.3 |
| Aug | Temp (°C) | 23.8 | 26.9 | 27.7 | 27.9 | 27.7 | 28.6 | 28.9 | 29.2 | 28.4 | 27.8 | 30.4 | 25.3 | 30.8 | 26.8 | 26.7 | 30.3 | 30.4 | 30.6 |
| | Density | 20.0 | 26.5 | 24.8 | 18.7 | 26.4 | 13.1 | 13.8 | 17.8 | 23.1 | 18.0 | 5.7 | 26.9 | 6.1 | 27.2 | 27.0 | 26.8 | 27.7 | 27.3 |
| Sep | Temp (°C) | 22.4 | 25.7 | 24.8 | 25.6 | 25.8 | 26.6 | 26.7 | 26.9 | 27.4 | 27.4 | 28.5 | 27.3 | 29.1 | 28.0 | 27.9 | 29.3 | 30.3 | 29.7 |
| | Density | 20.0 | 25.7 | 24.1 | 19.0 | 25.9 | 13.8 | 13.6 | 17.6 | 21.6 | 17.0 | 7.3 | 26.5 | 6.7 | 27.0 | 26.9 | 26.3 | 27.0 | 26.9 |
| Oct | Temp (°C) | 18.6 | 23.2 | 20.2 | 21.2 | 21.3 | 22.0 | 22.4 | 23.0 | 23.5 | 23.8 | 24.6 | 24.7 | 25.7 | 25.6 | 25.7 | 26.9 | 27.7 | 27.5 |
| | Density | 20.2 | 26.0 | 23.8 | 19.4 | 25.6 | 14.8 | 14.2 | 17.8 | 20.6 | 15.1 | 5.9 | 25.4 | 7.6 | 26.3 | 26.4 | 25.9 | 26.6 | 26.7 |
| Nov | Temp (°C) | 13.8 | 19.3 | 15.4 | 16.3 | 15.7 | 16.8 | 17.3 | 18.2 | 18.9 | 19.4 | 20.2 | 21.5 | 23.0 | 23.1 | 22.9 | 24.4 | 23.7 | 24.4 |
| | Density | 20.6 | 25.8 | 22.0 | 18.1 | 25.6 | 14.2 | 14.0 | 18.7 | 21.8 | 15.3 | 5.3 | 25.6 | 10.5 | 26.3 | 26.3 | 26.3 | 27.0 | 27.0 |
| Dec | Temp (°C) | 8.4 | 18.0 | 11.4 | 11.7 | 10.7 | 11.9 | 12.3 | 14.2 | 14.5 | 15.3 | 15.8 | 18.1 | 19.1 | 19.2 | 19.9 | 22.6 | 21.8 | 22.3 |
| | Density | 20.5 | 25.9 | 23.6 | 16.6 | 25.5 | 13.0 | 12.8 | 18.6 | 22.4 | 17.1 | 6.2 | 25.5 | 15.0 | 25.8 | 26.7 | 26.5 | 26.0 | 26.9 |
| Mean | Temp (°C) | 14.4 | 20.7 | 18.3 | 19.4 | 18.8 | 19.9 | 20.3 | 21.3 | 21.5 | 21.5 | 23.2 | 22.0 | 24.4 | 22.9 | 23.3 | 26.0 | 26.1 | 26.3 |
| | Density | 19.7 | 26.1 | 23.2 | 16.6 | 25.3 | 12.0 | 11.8 | 16.7 | 22.0 | 17.8 | 6.8 | 26.2 | 11.5 | 26.7 | 26.8 | 26.7 | 27.1 | 27.1 |

F (Fahrenheit) = 1.8C (Celsius) + 32

Density as used in this table is the specific gravity of the sea water or the ratio between the weight of a sea-water sample and the weight of an equal volume of distilled water at 15°C (59°F).

## Atlantic Ocean Distances - Montreal, Canada to the Panama Canal (nautical miles)

| | Panama Canal (Pacific) | Panama Canal (Atlantic) | Yucatan Channel | San Juan, PR | Corpus Christi, TX | Galveston, TX | Port Arthur, TX | New Orleans, LA (via SW Pass) | Mobile, AL | Pensacola, FL | Tampa, FL | Straits of Florida | Key West, FL | Jacksonville, FL | Savannah, GA | Charleston, SC | Wilmington, NC | Diamond Shoals | Norfolk, VA | Chesapeake Bay (entrance) | Baltimore, MD | Philadelphia, PA | New York, NY | Nantucket Shoals | Boston, MA | Portland, ME | Gut of Canso (Lock) | Cabot Strait |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Montreal, Quebec* (St. Lambert Lock) | 3249 | 3203 | 2730 | 2445 | 3347 | 3242 | 3240 | 3080 | 3011 | 2977 | 2772 | 2540 | 2479 | 2172 | 2088 | 2014 | 1948 | 1729 | 1716 | 1689 | 1838 | 1682 | 1534 | 1311 | 1318 | 1276 | 717 | 681 |
| Cabot Strait 45°07.0'N., 60°17.0'W. | 2568 | 2522 | 2049 | 1764 | 2666 | 2561 | 2559 | 2399 | 2330 | 2296 | 2091 | 1859 | 1798 | 1491 | 1407 | 1333 | 1267 | 1048 | 1035 | 1008 | 1157 | 1001 | 853 | 630 | 637 | 595 | 120 | - |
| Gut of Canso (Lock) 45°39.0'N., 61°25.0'W. | 2465 | 2419 | 1937 | 1669 | 2558 | 2453 | 2451 | 2291 | 2222 | 2188 | 1983 | 1751 | 1690 | 1379 | 1295 | 1221 | 1155 | 936 | 923 | 896 | 1046 | 890 | 742 | 519 | 526 | 484 | - | |
| Portland, ME 43°39.4'N., 70°14.7'W. | 2235 | 2189 | 1629 | 1531 | 2255 | 2150 | 2148 | 1988 | 1919 | 1885 | 1680 | 1448 | 1387 | 1071 | 987 | 913 | 847 | 628 | 611 | 584 | 734 | 575 | 426 | 203 | 100 | - | | |
| Boston, MA 42°22.0'N., 71°03.0'W. | 2195 | 2149 | 1589 | 1486 | 2215 | 2110 | 2108 | 1948 | 1879 | 1845 | 1640 | 1408 | 1347 | 1031 | 947 | 873 | 807 | 588 | 571 | 544 | 694 | 535 | 386 | 163 | - | | | |
| Nantucket Shoals 40°30.0'N., 69°25.0'W. | 2032 | 1986 | 1426 | 1334 | 2052 | 1947 | 1945 | 1785 | 1716 | 1682 | 1477 | 1245 | 1184 | 868 | 784 | 710 | 644 | 425 | 408 | 381 | 531 | 372 | 223 | - | | | | |
| New York, NY 40°42.0'N., 74°01.0'W. | 2018 | 1972 | 1346 | 1399 | 1977 | 1872 | 1870 | 1710 | 1641 | 1607 | 1402 | 1170 | 1109 | 788 | 704 | 630 | 564 | 345 | 294 | 267 | 417 | 240 | - | | | | | |
| Philadelphia, PA 39°56.8'N., 75°08.3'W. | 2001 | 1955 | 1323 | 1395 | 1954 | 1849 | 1847 | 1687 | 1618 | 1584 | 1379 | 1147 | 1086 | 765 | 681 | 607 | 541 | 322 | 269 | 242 | 392 | - | | | | | | |
| Baltimore, MD 39°16.0'N., 76°34.5'W. | 1950 | 1904 | 1268 | 1375 | 1899 | 1794 | 1792 | 1632 | 1563 | 1529 | 1324 | 1092 | 1031 | 710 | 626 | 552 | 486 | 267 | 173 | 150 | - | | | | | | | |
| Chesapeake Bay (entrance) 36°56.3'N., 75°58.6'W. | 1800 | 1754 | 1118 | 1225 | 1749 | 1644 | 1642 | 1482 | 1413 | 1379 | 1174 | 942 | 881 | 560 | 476 | 402 | 336 | 117 | 27 | - | | | | | | | | |
| Norfolk, VA 36°50.9'N., 76°17.9'W. | 1827 | 1781 | 1145 | 1252 | 1776 | 1671 | 1669 | 1509 | 1440 | 1406 | 1201 | 969 | 908 | 587 | 503 | 429 | 363 | 144 | - | | | | | | | | | |
| Diamond Shoals 35°08.0'N., 75°15.0'W. | 1683 | 1637 | 1001 | 1114 | 1632 | 1527 | 1525 | 1365 | 1296 | 1262 | 1057 | 825 | 764 | 443 | 359 | 285 | 219 | - | | | | | | | | | | |
| Wilmington, NC 34°14.0'N., 77°57.0'W. | 1655 | 1609 | 904 | 1153 | 1535 | 1430 | 1428 | 1268 | 1199 | 1165 | 960 | 728 | 667 | 315 | 227 | 151 | - | | | | | | | | | | | |
| Charleston, SC 32°47.2'N., 79°55.2'W. | 1609 | 1563 | 809 | 1138 | 1440 | 1335 | 1333 | 1173 | 1104 | 1070 | 865 | 633 | 572 | 197 | 102 | - | | | | | | | | | | | | |
| Savannah, GA 32°05.0'N., 81°05.7'W. | 1610 | 1564 | 780 | 1156 | 1411 | 1306 | 1304 | 1144 | 1075 | 1041 | 836 | 604 | 543 | 145 | - | | | | | | | | | | | | | |
| Jacksonville, FL 30°19.2'N., 81°39.0'W. | 1559 | 1513 | 699 | 1121 | 1330 | 1225 | 1223 | 1063 | 994 | 960 | 755 | 523 | 462 | - | | | | | | | | | | | | | | |
| Key West, FL 24°33.7'N., 81°48.5'W. | 1106 | 1060 | 251 | 966 | 880 | 775 | 773 | 613 | 544 | 510 | 305 | 73 | - | | | | | | | | | | | | | | | |
| Straits of Florida 24°25.0'N., 83°00.0'W. | 1047 | 1001 | 192 | 1017 | 807 | 702 | 700 | 540 | 471 | 437 | 232 | - | | | | | | | | | | | | | | | | |
| Tampa, FL 27°56.5'N., 82°26.7'W. | 1259 | 1213 | 404 | 1249 | 810 | 703 | 697 | 502 | 389 | 347 | - | | | | | | | | | | | | | | | | | |
| Pensacola, FL 30°24.0'N., 87°13.0'W. | 1388 | 1342 | 533 | 1448 | 618 | 509 | 504 | 288 | 89 | - | | | | | | | | | | | | | | | | | | |
| Mobile, AL 30°42.5'N., 88°02.5'W. | 1417 | 1371 | 562 | 1448 | 605 | 496 | 491 | 269 | - | | | | | | | | | | | | | | | | | | | |
| New Orleans, LA (via SW Pass) 29°57.0'N., 90°03.7'W. | 1442 | 1396 | 587 | 1557 | 555 | 446 | 441 | - | | | | | | | | | | | | | | | | | | | | |
| Port Arthur, TX 29°49.5'N., 93°57.6'W. | 1533 | 1487 | 691 | 1717 | 249 | 89 | - | | | | | | | | | | | | | | | | | | | | | |
| Galveston, TX 29°19.0'N., 94°47.0'W. | 1539 | 1493 | 696 | 1719 | 207 | - | | | | | | | | | | | | | | | | | | | | | | |
| Corpus Christi, TX 27°48.8'N., 97°24.0'W. | 1595 | 1549 | 769 | 1824 | - | | | | | | | | | | | | | | | | | | | | | | | |
| San Juan, PR 18°27.8'N., 66°06.7'W. | 1036 | 990 | 1111 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| Yucatan Channel 21°50.0'N., 85°03.0'W. | 855 | 809 | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| Panama Canal (Atlantic) 9°23.5'N., 79°55.3'W. | 46 | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Panama Canal (Pacific) 8°53.0'N., 79°31.0'W. | - | | | | | | | | | | | | | | | | | | | | | | | | | | | |

All tabular distances are by outside routes which can be used by the deepest-draft vessel that the listed ports can accommodate.
Lighter-draft vessels can save considerable mileage by transiting Canso Lock (Canada), the Cape Cod Canal (Massachusetts), and the Chesapeake and Delaware Canal (Delaware-Maryland); see the detailed tables. Gulf of Mexico distances are through the Shipping Safety Fairways.

*For Quebec City, Canada – subtract 139 miles

## Coastwise Distances – Norfolk, Virginia to Key West, Florida
(nautical miles)

| | Straits of Florida | Key West, FL | Miami, FL | Port Everglades, FL | Port of Palm Beach, FL | Stuart, FL | Fort Pierce, FL | Cape Canaveral, FL | St. Augustine, FL | Jacksonville, FL | Fernandina Beach, FL | Brunswick, GA | Savannah, GA | Port Royal, SC | Charleston, SC | Georgetown, SC | Wilmington, NC | Southport, NC | Morehead City, NC | Diamond Shoals, NC | Norfolk, VA | Chesapeake Bay Entrance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chesapeake Bay Entrance 36°56.3'N., 75°58.6'W. | 942 | 881 | 743 | 720 | 678 | 666 | 647 | 612 | 557 | 560 | 533 | 527 | 476 | 465 | 402 | 365 | 336 | 315 | 222 | 117 | 27 | - |
| Norfolk, VA 46°50.9'N., 76°17.9'W. | 969 | 908 | 770 | 747 | 705 | 693 | 674 | 639 | 584 | 587 | 560 | 554 | 503 | 492 | 429 | 392 | 363 | 342 | 249 | 144 | - | |
| Diamond Shoals, NC 35°08.0'N., 75°15.0'W. | 825 | 764 | 626 | 603 | 561 | 549 | 530 | 495 | 440 | 443 | 416 | 410 | 359 | 348 | 285 | 248 | 219 | 198 | 105 | - | | |
| Morehead City, NC 34°42.8'N., 76°41.8'W. | 772 | 711 | 573 | 550 | 509 | 497 | 476 | 438 | 377 | 379 | 352 | 346 | 295 | 284 | 220 | 184 | 154 | 133 | - | | | |
| Southport, NC 33°54.8'N., 78°01.0'W. | 707 | 646 | 508 | 485 | 443 | 423 | 407 | 367 | 296 | 294 | 265 | 260 | 206 | 191 | 130 | 87 | 21 | - | | | | |
| Wilmington, NC 34°14.0'N., 77°57.0'W. | 728 | 667 | 529 | 506 | 464 | 444 | 428 | 388 | 317 | 315 | 286 | 281 | 227 | 212 | 151 | 108 | - | | | | | |
| Georgetown, SC 33°21.4'N., 79°16.9'W. | 671 | 610 | 472 | 449 | 407 | 391 | 368 | 324 | 246 | 247 | 216 | 210 | 154 | 141 | 79 | - | | | | | | |
| Charleston, SC 32°47.2'N., 79°55.2'W. | 633 | 572 | 434 | 411 | 369 | 353 | 329 | 283 | 199 | 197 | 166 | 156 | 102 | 90 | - | | | | | | | |
| Port Royal, SC 32°22.3'N., 80°41.6'W. | 605 | 544 | 406 | 383 | 341 | 324 | 298 | 251 | 157 | 152 | 120 | 110 | 51 | - | | | | | | | | |
| Savannah,GA 32°05.0'N., 81°05.7'W. | 604 | 543 | 405 | 382 | 340 | 324 | 298 | 251 | 152 | 145 | 115 | 104 | - | | | | | | | | | |
| Brunswick,GA 31°08.0'N., 81°29.7'W. | 549 | 488 | 350 | 327 | 285 | 268 | 242 | 195 | 90 | 82 | 50 | - | | | | | | | | | | |
| Fernandina Beach, FL 30°40.3'N., 81°28.0'W. | 526 | 465 | 327 | 304 | 262 | 242 | 216 | 169 | 61 | 53 | - | | | | | | | | | | | |
| Jacksonville, FL 30°19.2'N., 81°39.0'W. | 523 | 462 | 324 | 301 | 256 | 240 | 214 | 167 | 56 | - | | | | | | | | | | | | |
| St. Augustine, FL 29°53.6'N., 81°18.5'W. | 475 | 414 | 276 | 253 | 211 | 192 | 167 | 120 | - | | | | | | | | | | | | | |
| Cape Canaveral, FL 28°24.6'N., 80°36.5'W. | 374 | 313 | 175 | 152 | 110 | 91 | 69 | - | | | | | | | | | | | | | | |
| Fort Pierce, FL 27°27.5'N., 80°19.3'W. | 316 | 255 | 117 | 94 | 52 | 32 | - | | | | | | | | | | | | | | | |
| Stuart, FL 27°12.2'N., 80°15.6'W. | 300 | 239 | 101 | 78 | 36 | - | | | | | | | | | | | | | | | | |
| Port of Palm Beach, FL 26°46.1'N., 80°03.0'W. | 267 | 207 | 68 | 46 | - | | | | | | | | | | | | | | | | | |
| Port Everglades, FL 26°05.6'N., 80°07.0'W. | 226 | 165 | 27 | - | | | | | | | | | | | | | | | | | | |
| Miami, FL 25°47.0'N., 80°11.0'W. | 211 | 151 | - | | | | | | | | | | | | | | | | | | | |
| KeyWest, FL 24°33.7'N., 81°48.5'W. | 73 | - | | | | | | | | | | | | | | | | | | | | |
| Straits of Florida 24°25.0'N., 83°00.0'W. | - | | | | | | | | | | | | | | | | | | | | | |

**Inside Route Distances - Norfolk, Virgina to Fernandina Beach, Florida**
**(nautical and statute miles)**

| | Fernandina Beach, FL | Brunswick, GA | Thunderbolt, GA | Savannah, GA | Beaufort, SC | Charleston, SC | McClellanville, SC | Georgetown, SC | Bucksport, SC | Little River, SC | Southport, NC | Wilmington, NC | Wrightsville, NC | Jacksonville, NC | Swansboro, NC | Morehead City, NC | Beaufort, NC | New Bern, NC | Oriental, NC | Ocracoke, NC | Washington, NC | Belhaven, NC | Manteo, NC | Plymouth, NC | Edenton, NC | Columbia, NC | Hertford, NC | Elizabeth City, NC | Norfolk, VA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Norfolk, VA** | 623 | 595 | 507 | 508 | 466 | 406 | 374 | 352 | 328 | 299 | 268 | 273 | 248 | 231 | 20 | 178 | 177 | 180 | 160 | 131 | 156 | 120 | 80 | 105 | 98 | 89 | 89 | 77* | • |
| **Elizabeth City, NC** | 581 | 553 | 465 | 466 | 424 | 364 | 332 | 311 | 286 | 257 | 226 | 231 | 204 | 189 | 158 | 136 | 134 | 139 | 118 | 91 | 114 | 79 | 39 | 56 | 48 | 39 | 39 | • | 89 |
| **Hertford, NC** | 582 | 554 | 466 | 467 | 425 | 366 | 333 | 311 | 287 | 259 | 227 | 232 | 205 | 190 | 160 | 137 | 137 | 139 | 119 | 97 | 115 | 79 | 46 | 42 | 35 | 26 | • | 45 | 102 |
| **Columbia, NC** | 581 | 553 | 465 | 466 | 424 | 364 | 332 | 310 | 286 | 257 | 226 | 231 | 204 | 189 | 158 | 136 | 136 | 138 | 118 | 96 | 114 | 78 | 45 | 33 | 25 | • | 30 | 45 | 102 |
| **Edenton, NC** | 589 | 562 | 474 | 475 | 432 | 373 | 340 | 318 | 294 | 266 | 235 | 240 | 213 | 197 | 166 | 145 | 144 | 146 | 126 | 104 | 123 | 87 | 54 | 14 | • | 29 | 40 | 55 | 113 |
| **Plymouth, NC** | 596 | 570 | 482 | 483 | 441 | 381 | 349 | 327 | 303 | 274 | 243 | 248 | 221 | 206 | 175 | 152 | 152 | 155 | 134 | 113 | 130 | 95 | 61 | • | 16 | 38 | 48 | 64 | 121 |
| **Manteo, NC** | 555 | 527 | 439 | 440 | 397 | 337 | 306 | 283 | 260 | 232 | 201 | 205 | 178 | 162 | 132 | 110 | 110 | 110 | 91 | 61 | 105 | 70 | • | 70 | 62 | 52 | 53 | 45 | 92 |
| **Belhaven, NC** | 506 | 479 | 391 | 392 | 349 | 290 | 257 | 235 | 211 | 183 | 152 | 157 | 130 | 114 | 83 | 61 | 61 | 63 | 43 | 43 | 39 | • | 81 | 109 | 100 | 90 | 91 | 91 | 138 |
| **Washington, NC** | 519 | 491 | 403 | 404 | 362 | 302 | 270 | 248 | 224 | 195 | 164 | 169 | 142 | 127 | 96 | 74 | 74 | 76 | 56 | 60 | • | 45 | 121 | 150 | 142 | 131 | 132 | 131 | 180 |
| **Ocracoke, NC** | 504 | 477 | 389 | 390 | 347 | 288 | 255 | 233 | 209 | 181 | 150 | 155 | 128 | 112 | 81 | 59 | 59 | 62 | 41 | • | 69 | 49 | 70 | 130 | 120 | 110 | 112 | 105 | 151 |
| **Oriental, NC** | 467 | 440 | 352 | 353 | 310 | 251 | 218 | 196 | 172 | 144 | 113 | 118 | 91 | 75 | 44 | 22 | 22 | 23 | • | 47 | 64 | 49 | 105 | 154 | 145 | 136 | 137 | 136 | 184 |
| **New Bern, NC** | 484 | 456 | 368 | 369 | 327 | 267 | 235 | 213 | 188 | 160 | 129 | 134 | 107 | 91 | 60 | 38 | 38 | • | 26 | 71 | 87 | 72 | 127 | 178 | 168 | 159 | 160 | 160 | 207 |
| **Beaufort, NC** | 447 | 420 | 332 | 333 | 290 | 231 | 199 | 177 | 152 | 124 | 93 | 97 | 70 | 55 | 24 | 3 | • | 44 | 25 | 68 | 85 | 70 | 127 | 175 | 166 | 157 | 158 | 154 | 204 |
| **Morehead City, NC** | 445 | 418 | 330 | 331 | 288 | 229 | 196 | 174 | 150 | 122 | 91 | 96 | 69 | 53 | 22 | • | 3 | 44 | 25 | 68 | 85 | 70 | 127 | 175 | 167 | 157 | 158 | 157 | 205 |
| **Swansboro, NC** | 423 | 396 | 307 | 309 | 266 | 207 | 174 | 152 | 128 | 100 | 69 | 73 | 46 | 31 | • | 25 | 28 | 69 | 51 | 93 | 110 | 96 | 152 | 201 | 191 | 182 | 184 | 182 | 230 |
| **Jacksonville, NC** | 425 | 397 | 309 | 310 | 268 | 208 | 176 | 154 | 129 | 101 | 70 | 75 | 48 | • | 36 | 61 | 63 | 105 | 86 | 129 | 146 | 131 | 186 | 237 | 227 | 217 | 219 | 217 | 266 |
| **Wrightsville, NC** | 377 | 349 | 261 | 262 | 220 | 160 | 128 | 106 | 82 | 53 | 22 | 27 | • | 55 | 53 | 79 | 81 | 123 | 105 | 147 | 163 | 150 | 205 | 254 | 245 | 235 | 236 | 235 | 283 |
| **Wilmington, NC** | 376 | 349 | 260 | 261 | 219 | 159 | 127 | 105 | 81 | 52 | 21 | • | 31 | 86 | 84 | 110 | 112 | 154 | 136 | 178 | 194 | 181 | 236 | 285 | 276 | 266 | 267 | 266 | 314 |
| **Southport, NC** | 355 | 327 | 239 | 240 | 198 | 138 | 106 | 84 | 60 | 31 | • | 24 | 25 | 81 | 79 | 105 | 107 | 148 | 130 | 173 | 189 | 175 | 231 | 280 | 270 | 260 | 261 | 260 | 308 |
| **Little River, SC** | 324 | 296 | 208 | 209 | 167 | 107 | 75 | 53 | 28 | • | 36 | 60 | 61 | 116 | 115 | 140 | 143 | 184 | 166 | 208 | 224 | 211 | 267 | 315 | 306 | 296 | 298 | 296 | 344 |
| **Bucksport, SC** | 295 | 268 | 179 | 181 | 138 | 79 | 46 | 24 | • | 32 | 69 | 93 | 94 | 148 | 147 | 173 | 175 | 216 | 198 | 241 | 258 | 243 | 299 | 349 | 338 | 329 | 330 | 329 | 377 |
| **Georgetown, SC** | 273 | 246 | 157 | 159 | 116 | 56 | 24 | • | 28 | 61 | 97 | 121 | 122 | 177 | 175 | 200 | 203 | 245 | 226 | 268 | 285 | 270 | 326 | 376 | 366 | 357 | 358 | 358 | 405 |
| **McClellanville, SC** | 249 | 222 | 133 | 135 | 92 | 32 | • | 28 | 53 | 86 | 122 | 146 | 147 | 203 | 200 | 226 | 229 | 270 | 251 | 293 | 311 | 296 | 352 | 402 | 391 | 382 | 383 | 382 | 430 |
| **Charleston, SC** | 218 | 191 | 103 | 104 | 60 | • | 37 | 64 | 91 | 123 | 159 | 183 | 184 | 239 | 238 | 264 | 266 | 307 | 289 | 331 | 348 | 334 | 388 | 438 | 429 | 419 | 421 | 419 | 467 |
| **Beaufort, SC** | 157 | 130 | 41 | 43 | • | 69 | 106 | 133 | 159 | 192 | 228 | 252 | 253 | 308 | 306 | 331 | 334 | 376 | 357 | 399 | 417 | 402 | 457 | 508 | 497 | 488 | 489 | 488 | 536 |
| **Savannah, GA** | 130 | 102 | 14 | • | 49 | 120 | 155 | 183 | 208 | 241 | 276 | 300 | 302 | 357 | 356 | 381 | 383 | 425 | 406 | 449 | 465 | 451 | 506 | 556 | 547 | 536 | 537 | 536 | 585 |
| **Thunderbolt, GA** | 116 | 88 | • | 16 | 47 | 119 | 153 | 181 | 206 | 239 | 275 | 299 | 300 | 356 | 353 | 380 | 382 | 423 | 405 | 448 | 464 | 450 | 505 | 555 | 545 | 535 | 536 | 535 | 583 |
| **Brunswick, GA** | 35 | • | 101 | 117 | 150 | 220 | 255 | 283 | 308 | 341 | 376 | 402 | 402 | 457 | 456 | 481 | 483 | 525 | 506 | 549 | 565 | 551 | 606 | 656 | 647 | 636 | 638 | 636 | 685 |
| **Fernandina Beach, FL** | • | 40 | 133 | 150 | 181 | 251 | 287 | 314 | 339 | 373 | 409 | 433 | 434 | 489 | 487 | 512 | 514 | 557 | 537 | 580 | 597 | 582 | 639 | 688 | 678 | 669 | 670 | 669 | 717 |

*51 statute miles/44 nautical miles via the Dismal Swamp Canal

**Inside Route Distances - Fernandina Beach, Florida to Key West, Florida**
**(nautical and statute miles)**

| | Key West | Flamingo | Marathon | Metecumbe Harbor | Tavernier | Miami | Port Everglades | Fort Lauderdale | Port of Palm Beach | Jupiter | Fort Myers | Moore Haven | Clewiston | Port Mayaca | Stuart | Salerno | Fort Pierce | Vero Beach | Melbourne | Eau Gallie | Cocoa | Titusville | New Smyrna Beach | Daytona Beach | Marineland | St. Augustine | Jacksonville | Fernandina Beach | Norfolk, VA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Norfolk, VA** | 1061 | 1050 | 1045 | 1017 | 999 | 947 | 927 | 925 | 885 | 873 | 975 | 926 | 915 | 892 | 865 | 860 | 839 | 827 | 798 | 795 | 780 | 764 | 735 | 722 | 692 | 676 | 659 | 623 | • |
| **Fernandina Beach** | 458 | 427 | 422 | 394 | 378 | 324 | 304 | 303 | 262 | 251 | 353 | 303 | 292 | 269 | 242 | 237 | 216 | 204 | 175 | 172 | 157 | 141 | 113 | 99 | 69 | 53 | 36 | • | 717 |
| **Jacksonville** | 454 | 423 | 418 | 390 | 374 | 320 | 300 | 299 | 258 | 247 | 349 | 299 | 288 | 265 | 238 | 233 | 212 | 200 | 171 | 168 | 153 | 137 | 108 | 95 | 65 | 49 | • | 41 | 758 |
| **St. Augustine** | 405 | 374 | 369 | 341 | 324 | 271 | 251 | 249 | 209 | 197 | 299 | 250 | 239 | 216 | 189 | 184 | 163 | 151 | 122 | 119 | 104 | 88 | 59 | 46 | 16 | • | 56 | 60 | 778 |
| **Marineland** | 389 | 358 | 353 | 325 | 309 | 255 | 235 | 234 | 193 | 182 | 284 | 235 | 223 | 200 | 173 | 169 | 148 | 136 | 106 | 103 | 89 | 72 | 44 | 30 | • | 18 | 75 | 79 | 796 |
| **Daytona Beach** | 359 | 328 | 323 | 295 | 279 | 225 | 205 | 204 | 163 | 152 | 254 | 204 | 193 | 170 | 143 | 138 | 117 | 105 | 76 | 73 | 58 | 42 | 14 | • | 35 | 53 | 109 | 114 | 831 |
| **New Smyrna Beach** | 345 | 315 | 309 | 282 | 265 | 211 | 191 | 190 | 150 | 18 | 240 | 191 | 180 | 157 | 130 | 125 | 104 | 92 | 63 | 59 | 45 | 28 | • | 16 | 51 | 68 | 124 | 130 | 846 |
| **Titusville** | 317 | 286 | 281 | 253 | 237 | 183 | 163 | 162 | 121 | 110 | 212 | 163 | 151 | 128 | 101 | 97 | 76 | 64 | 34 | 31 | 17 | • | 32 | 48 | 83 | 101 | 158 | 162 | 879 |
| **Cocoa** | 301 | 270 | 264 | 237 | 220 | 166 | 146 | 145 | 105 | 93 | 195 | 146 | 135 | 112 | 85 | 80 | 59 | 47 | 18 | 14 | • | 20 | 52 | 67 | 102 | 120 | 176 | 181 | 898 |
| **Eau Gallie** | 286 | 255 | 250 | 223 | 206 | 152 | 132 | 131 | 90 | 79 | 181 | 132 | 120 | 97 | 70 | 66 | 45 | 33 | 3 | • | 16 | 36 | 68 | 84 | 119 | 137 | 193 | 198 | 915 |
| **Melbourne** | 283 | 252 | 247 | 219 | 203 | 149 | 129 | 128 | 87 | 76 | 178 | 128 | 117 | 94 | 67 | 62 | 41 | 29 | • | 14 | 21 | 39 | 72 | 87 | 122 | 140 | 197 | 201 | 918 |
| **Vero Beach** | 254 | 223 | 217 | 190 | 173 | 119 | 99 | 98 | 58 | 46 | 148 | 99 | 88 | 65 | 38 | 33 | 12 | • | 34 | 38 | 54 | 74 | 106 | 121 | 157 | 174 | 230 | 235 | 952 |
| **Fort Pierce** | 242 | 211 | 205 | 178 | 161 | 107 | 87 | 86 | 46 | 34 | 136 | 87 | 76 | 53 | 26 | 21 | • | 14 | 47 | 52 | 68 | 87 | 120 | 135 | 170 | 188 | 244 | 249 | 966 |
| **Salerno** | 224 | 193 | 188 | 161 | 144 | 90 | 70 | 69 | 28 | 17 | 119 | 70 | 58 | 35 | 8 | • | 24 | 38 | 71 | 76 | 92 | 112 | 144 | 159 | 194 | 212 | 268 | 273 | 990 |
| **Stuart** | 229 | 198 | 193 | 165 | 149 | 95 | 75 | 74 | 33 | 22 | 111 | 61 | 50 | 27 | • | 9 | 30 | 44 | 77 | 81 | 98 | 116 | 150 | 165 | 199 | 217 | 274 | 278 | 995 |
| **Port Mayaca** | 256 | 225 | 220 | 192 | 176 | 122 | 102 | 101 | 60 | 49 | 83 | 34 | 23 | • | 31 | 40 | 61 | 75 | 108 | 112 | 129 | 147 | 181 | 196 | 230 | 248 | 305 | 310 | 1026 |
| **Clewiston** | 279 | 248 | 243 | 215 | 199 | 145 | 125 | 124 | 83 | 72 | 61 | 11 | • | 26 | 58 | 67 | 87 | 101 | 135 | 138 | 155 | 174 | 207 | 222 | 257 | 275 | 331 | 336 | 1053 |
| **Moore Haven** | 290 | 259 | 254 | 227 | 210 | 156 | 136 | 135 | 94 | 83 | 49 | • | 13 | 40 | 70 | 81 | 100 | 114 | 148 | 152 | 168 | 188 | 220 | 235 | 270 | 288 | 344 | 349 | 1066 |
| **Fort Myers** | 339 | 309 | 303 | 276 | 259 | 205 | 185 | 184 | 144 | 132 | • | 56 | 70 | 96 | 128 | 137 | 157 | 170 | 205 | 208 | 224 | 244 | 276 | 292 | 327 | 344 | 402 | 406 | 1122 |
| **Jupiter** | 207 | 177 | 171 | 144 | 127 | 73 | 53 | 52 | 12 | • | 152 | 96 | 83 | 56 | 25 | 20 | 39 | 53 | 87 | 91 | 107 | 127 | 159 | 175 | 209 | 227 | 284 | 289 | 1005 |
| **Port of Palm Beach** | 196 | 165 | 160 | 132 | 116 | 62 | 42 | 41 | • | 14 | 166 | 108 | 96 | 69 | 38 | 32 | 53 | 67 | 100 | 104 | 121 | 139 | 173 | 188 | 222 | 241 | 297 | 302 | 1018 |
| **Fort Lauderdale** | 155 | 125 | 119 | 92 | 75 | 21 | 1 | • | 47 | 60 | 212 | 155 | 143 | 116 | 85 | 79 | 99 | 113 | 147 | 151 | 167 | 186 | 219 | 235 | 269 | 287 | 344 | 348 | 1064 |
| **Port Everglades** | 154 | 123 | 118 | 91 | 74 | 20 | • | 1 | 48 | 61 | 213 | 156 | 144 | 117 | 86 | 80 | 100 | 114 | 148 | 152 | 168 | 188 | 220 | 236 | 270 | 289 | 345 | 350 | 1067 |
| **Miami** | 134 | 104 | 98 | 71 | 54 | • | 23 | 24 | 71 | 84 | 236 | 180 | 167 | 141 | 109 | 104 | 123 | 137 | 171 | 175 | 191 | 211 | 243 | 259 | 293 | 312 | 368 | 373 | 1090 |
| **Tavernier** | 83 | 52 | 47 | 19 | • | 62 | 85 | 86 | 133 | 146 | 298 | 242 | 229 | 203 | 171 | 166 | 185 | 199 | 234 | 237 | 253 | 273 | 305 | 321 | 356 | 373 | 430 | 435 | 1150 |
| **Matecumbe Harbor** | 65 | 35 | 29 | • | 22 | 82 | 105 | 106 | 152 | 166 | 318 | 261 | 247 | 221 | 190 | 185 | 205 | 219 | 252 | 257 | 273 | 291 | 323 | 339 | 374 | 392 | 449 | 453 | 1170 |
| **Marathon** | 42 | 34 | • | 33 | 54 | 113 | 136 | 137 | 184 | 197 | 349 | 292 | 280 | 253 | 222 | 216 | 236 | 250 | 284 | 288 | 304 | 323 | 356 | 372 | 407 | 425 | 481 | 486 | 1203 |
| **Flamingo** | 73 | • | 39 | 40 | 60 | 120 | 142 | 144 | 190 | 204 | 356 | 296 | 285 | 259 | 228 | 222 | 243 | 257 | 290 | 293 | 311 | 329 | 362 | 377 | 412 | 430 | 486 | 491 | 1208 |
| **Key West** | • | 84 | 48 | 75 | 96 | 154 | 177 | 178 | 226 | 239 | 390 | 334 | 321 | 295 | 264 | 258 | 278 | 292 | 326 | 329 | 346 | 365 | 397 | 413 | 448 | 466 | 522 | 527 | 1244 |

## Distances on St. Johns River, Florida
## (nautical and statute miles)

| | Lake Harney | Sanford | Astor-Volusia | Georgetown | Leesburg | Moss Bluff Lock | Silver Springs | Welaka | Crescent City | Palatka | Doctors Lake Inlet | Jacksonville | Broward River (mouth) | Intracoastal Waterway | Mayport | St. Johns River (mouth) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **St. Johns River (mouth)** | 161 | 143 | 109 | 95 | 162 | 145 | 136 | 86 | 89 | 68 | 32 | 20 | 12 | 4 | 2 | • |
| **Mayport** | 159 | 141 | 107 | 93 | 160 | 143 | 134 | 84 | 87 | 66 | 30 | 18 | 10 | 2 | • | 2 |
| **Intracoastal Waterway** | 157 | 139 | 105 | 91 | 158 | 141 | 132 | 82 | 85 | 64 | 28 | 16 | 8 | • | 2 | 5 |
| **Broward River (mouth)** | 149 | 131 | 97 | 83 | 150 | 133 | 124 | 74 | 77 | 56 | 20 | 8 | • | 9 | 12 | 14 |
| **Jacksonville** | 141 | 123 | 89 | 75 | 142 | 125 | 116 | 66 | 69 | 48 | 12 | • | 9 | 18 | 21 | 23 |
| **Doctors Lake Inlet** | 129 | 111 | 77 | 62 | 129 | 112 | 104 | 54 | 56 | 36 | • | 14 | 23 | 32 | 35 | 37 |
| **Palatka** | 93 | 75 | 41 | 26 | 94 | 76 | 68 | 18 | 20 | • | 41 | 55 | 64 | 74 | 76 | 78 |
| **Crescent City** | 101 | 83 | 49 | 35 | 102 | 85 | 76 | 26 | • | 23 | 64 | 79 | 89 | 98 | 100 | 102 |
| **Welaka** | 75 | 57 | 23 | 8 | 75 | 58 | 50 | • | 30 | 21 | 62 | 76 | 85 | 94 | 97 | 99 |
| **Silver Springs** | 123 | 105 | 71 | 56 | 31 | 14 | • | 58 | 87 | 78 | 120 | 134 | 143 | 152 | 154 | 157 |
| **Moss Bluff Lock** | 131 | 113 | 79 | 65 | 17 | • | 16 | 67 | 98 | 87 | 129 | 144 | 153 | 162 | 165 | 167 |
| **Leesburg** | 148 | 131 | 96 | 82 | • | 20 | 36 | 86 | 117 | 108 | 148 | 163 | 173 | 182 | 184 | 186 |
| **Georgetown** | 66 | 49 | 14 | • | 94 | 75 | 64 | 9 | 40 | 30 | 71 | 86 | 96 | 105 | 107 | 109 |
| **Astor-Volusia** | 52 | 34 | • | 16 | 110 | 91 | 82 | 26 | 56 | 47 | 89 | 102 | 112 | 121 | 123 | 125 |
| **Sanford** | 18 | • | 39 | 56 | 151 | 130 | 121 | 66 | 96 | 86 | 128 | 142 | 151 | 160 | 162 | 165 |
| **Lake Harney** | • | 21 | 60 | 76 | 170 | 151 | 142 | 86 | 116 | 107 | 148 | 162 | 171 | 181 | 183 | 185 |

## Distance of Visibility for Objects Having Various Elevations

| Height (feet) | Distance (nautical miles) | Distance (statute miles) | Height (meters) |
|---|---|---|---|
| 1 | 1.2 | 1.3 | 0.3 |
| 2 | 1.7 | 1.9 | 0.6 |
| 3 | 2.0 | 2.3 | 0.9 |
| 4 | 2.3 | 2.7 | 1.2 |
| 5 | 2.6 | 3.0 | 1.5 |
| 6 | 2.9 | 3.3 | 1.8 |
| 7 | 3.1 | 3.6 | 2.1 |
| 8 | 3.3 | 3.8 | 2.4 |
| 9 | 3.5 | 4.0 | 2.7 |
| 10 | 3.7 | 4.3 | 3.1 |
| 11 | 3.9 | 4.5 | 3.4 |
| 12 | 4.1 | 4.7 | 3.7 |
| 13 | 4.2 | 4.9 | 4.0 |
| 14 | 4.4 | 5.0 | 4.3 |
| 15 | 4.5 | 5.2 | 4.6 |
| 16 | 4.7 | 5.4 | 4.9 |
| 17 | 4.8 | 5.6 | 5.2 |
| 18 | 5.0 | 5.7 | 5.5 |
| 19 | 5.1 | 5.9 | 5.8 |
| 20 | 5.2 | 6.0 | 6.1 |
| 21 | 5.4 | 6.2 | 6.4 |
| 22 | 5.5 | 6.3 | 6.7 |
| 23 | 5.6 | 6.5 | 7.0 |
| 24 | 5.7 | 6.6 | 7.3 |
| 25 | 5.9 | 6.7 | 7.6 |
| 26 | 6.0 | 6.9 | 7.9 |
| 27 | 6.1 | 7.0 | 8.2 |
| 28 | 6.2 | 7.1 | 8.5 |
| 29 | 6.3 | 7.3 | 8.8 |
| 30 | 6.4 | 7.4 | 9.1 |
| 31 | 6.5 | 7.5 | 9.5 |
| 32 | 6.6 | 7.6 | 9.8 |
| 33 | 6.7 | 7.7 | 10.1 |
| 34 | 6.8 | 7.9 | 10.4 |
| 35 | 6.9 | 8.0 | 10.7 |
| 36 | 7.0 | 8.1 | 11.0 |
| 37 | 7.1 | 8.2 | 11.3 |
| 38 | 7.2 | 8.3 | 11.6 |
| 39 | 7.3 | 8.4 | 11.9 |
| 40 | 7.4 | 8.5 | 12.2 |
| 41 | 7.5 | 8.6 | 12.5 |
| 42 | 7.6 | 8.7 | 12.8 |
| 43 | 7.7 | 8.8 | 13.1 |
| 44 | 7.8 | 8.9 | 13.4 |
| 45 | 7.8 | 9.0 | 13.7 |
| 46 | 7.9 | 9.1 | 14.0 |
| 47 | 8.0 | 9.2 | 14.3 |
| 48 | 8.1 | 9.3 | 14.6 |
| 49 | 8.2 | 9.4 | 14.9 |
| 50 | 8.3 | 9.5 | 15.2 |
| 55 | 8.7 | 10.0 | 16.8 |
| 60 | 9.1 | 10.4 | 18.3 |
| 65 | 9.4 | 10.9 | 19.8 |
| 70 | 9.8 | 11.3 | 21.3 |
| 75 | 10.1 | 11.7 | 22.9 |
| 80 | 10.5 | 12.0 | 24.4 |
| 85 | 10.8 | 12.4 | 25.9 |
| 90 | 11.1 | 12.8 | 27.4 |
| 95 | 11.4 | 13.1 | 29.0 |
| 100 | 11.7 | 13.5 | 30.5 |
| 105 | 12.0 | 13.8 | 32.0 |
| 110 | 12.3 | 14.1 | 33.5 |
| 115 | 12.5 | 14.4 | 33.1 |

| Height (feet) | Distance (nautical miles) | Distance (statute miles) | Height (meters) |
|---|---|---|---|
| 120 | 12.8 | 14.7 | 36.6 |
| 125 | 13.1 | 15.1 | 38.1 |
| 130 | 13.3 | 15.4 | 39.6 |
| 135 | 13.6 | 15.6 | 41.2 |
| 140 | 13.8 | 15.9 | 42.7 |
| 145 | 14.1 | 16.2 | 44.2 |
| 150 | 14.3 | 16.5 | 45.7 |
| 160 | 14.8 | 17.0 | 48.8 |
| 170 | 15.3 | 17.6 | 51.8 |
| 180 | 15.7 | 18.1 | 54.9 |
| 190 | 16.1 | 18.6 | 57.9 |
| 200 | 16.5 | 19.0 | 61.0 |
| 210 | 17.0 | 19.5 | 64.0 |
| 220 | 17.4 | 20.0 | 67.1 |
| 230 | 17.7 | 20.4 | 70.1 |
| 240 | 18.1 | 20.9 | 73.2 |
| 250 | 18.5 | 21.3 | 76.2 |
| 260 | 18.9 | 21.7 | 79.3 |
| 270 | 19.2 | 22.1 | 82.3 |
| 280 | 19.6 | 22.5 | 85.3 |
| 290 | 19.9 | 22.9 | 88.4 |
| 300 | 20.3 | 23.3 | 91.4 |
| 310 | 20.6 | 23.7 | 94.5 |
| 320 | 20.9 | 24.1 | 97.5 |
| 330 | 21.3 | 24.5 | 100.6 |
| 340 | 21.6 | 24.8 | 103.6 |
| 350 | 21.9 | 25.2 | 106.7 |
| 360 | 22.2 | 25.5 | 109.7 |
| 370 | 22.5 | 25.9 | 112.8 |
| 380 | 22.8 | 26.2 | 115.8 |
| 390 | 23.1 | 26.6 | 118.9 |
| 400 | 23.4 | 26.9 | 121.9 |
| 410 | 23.7 | 27.3 | 125.0 |
| 420 | 24.0 | 27.6 | 128.0 |
| 430 | 24.3 | 27.9 | 131.1 |
| 440 | 24.5 | 28.2 | 134.1 |
| 450 | 24.8 | 28.6 | 137.2 |
| 460 | 25.1 | 28.9 | 140.2 |
| 470 | 25.4 | 29.2 | 143.3 |
| 480 | 25.6 | 29.5 | 146.3 |
| 490 | 25.9 | 29.8 | 149.4 |
| 500 | 26.2 | 30.1 | 152.4 |
| 510 | 26.4 | 30.4 | 155.5 |
| 520 | 26.7 | 30.7 | 158.5 |
| 530 | 26.9 | 31.0 | 161.5 |
| 540 | 27.2 | 31.3 | 164.6 |
| 550 | 27.4 | 31.6 | 167.6 |
| 560 | 27.7 | 31.9 | 170.7 |
| 570 | 27.9 | 32.1 | 173.7 |
| 580 | 28.2 | 32.4 | 176.8 |
| 590 | 28.4 | 32.7 | 179.8 |
| 600 | 28.7 | 33.0 | 182.9 |
| 620 | 29.1 | 33.5 | 189.0 |
| 640 | 29.5 | 34.1 | 195.1 |
| 660 | 30.1 | 34.6 | 201.2 |
| 680 | 30.5 | 35.1 | 207.3 |
| 700 | 31.0 | 35.6 | 213.4 |
| 720 | 31.4 | 36.1 | 219.5 |
| 740 | 31.8 | 36.6 | 225.6 |
| 760 | 32.3 | 37.1 | 231.7 |
| 780 | 32.7 | 37.6 | 237.7 |
| 800 | 33.1 | 38.1 | 243.8 |
| 820 | 33.5 | 38.6 | 249.9 |

This table gives the approximate geographic range of visibility for an object which may be seen by an observer. It is necessary to add to the distance for the height of any object the distance corresponding to the height of the observer's eye above sea level.

**Example** – determine the geographic visibility of an object 65 feet above the water, for an observer whose eye is 35 feet above the water:

9.4 nautical miles = **Height of object** (65 feet)
6.9 nautical miles = **Height of observer** (35 feet)
16.3 nautical miles = **Computed geographic visibility**

## Conversion of Degrees to Points and Points to Degrees

| Deg ° | Min ' | Points |
|---|---|---|
| 000 | 00 | N |
| 002 | 49 | |
| 005 | 38 | N ½ E |
| 008 | 26 | |
| 011 | 15 | N x E |
| 014 | 04 | |
| 016 | 53 | N x E ½ E |
| 019 | 41 | |
| 022 | 30 | NNE |
| 025 | 19 | |
| 028 | 08 | NNE ½ E |
| 030 | 56 | |
| 033 | 45 | NE x N |
| 036 | 34 | |
| 039 | 23 | NE ½ N |
| 042 | 11 | |
| 045 | 00 | NE |
| 047 | 49 | |
| 050 | 38 | NE ½ E |
| 053 | 26 | |
| 056 | 15 | NE x E |
| 059 | 04 | |
| 061 | 53 | NE x E ½ E |
| 064 | 41 | |
| 067 | 30 | ENE |
| 070 | 19 | |
| 073 | 08 | ENE ½ E |
| 075 | 56 | |
| 078 | 45 | E x N |
| 081 | 34 | |
| 084 | 23 | E ½ N |
| 087 | 11 | |
| 090 | 00 | E |
| 092 | 49 | |
| 095 | 38 | E ½ S |
| 098 | 26 | |
| 101 | 15 | E x S |
| 104 | 04 | |
| 106 | 53 | ESE ½ E |
| 109 | 41 | |
| 112 | 30 | ESE |
| 115 | 19 | |
| 118 | 08 | SE x E ½ E |
| 120 | 56 | |
| 123 | 45 | SE x E |
| 126 | 34 | |
| 129 | 23 | SE ½ E |
| 132 | 11 | |
| 135 | 00 | SE |
| 137 | 49 | |
| 140 | 38 | SE ½ S |
| 143 | 26 | |
| 146 | 15 | SE x S |
| 149 | 04 | |
| 151 | 53 | SSE ½ E |
| 154 | 41 | |
| 157 | 30 | SSE |
| 160 | 19 | |
| 163 | 08 | S x E ½ E |
| 165 | 56 | |
| 168 | 45 | S x E |
| 171 | 34 | |
| 174 | 23 | S ½ E |
| 177 | 11 | |

| Deg ° | Min ' | Points |
|---|---|---|
| 180 | 00 | S |
| 182 | 49 | |
| 185 | 38 | S ½ W |
| 188 | 26 | |
| 191 | 15 | S x W |
| 194 | 04 | |
| 196 | 53 | S x W ½ W |
| 199 | 41 | |
| 202 | 30 | SSW |
| 205 | 19 | |
| 208 | 08 | SSW ½ W |
| 210 | 56 | |
| 213 | 45 | SW x W |
| 216 | 34 | |
| 219 | 23 | SW ½ S |
| 222 | 11 | |
| 225 | 00 | SW |
| 227 | 49 | |
| 230 | 38 | SW ½ W |
| 233 | 26 | |
| 236 | 15 | SW x W |
| 239 | 04 | |
| 241 | 53 | SW x W ½ W |
| 244 | 41 | |
| 247 | 30 | WSW |
| 250 | 19 | |
| 253 | 08 | WSW ½ W |
| 255 | 56 | |
| 258 | 45 | W x S |
| 261 | 34 | |
| 264 | 23 | W ½ S |
| 267 | 11 | |
| 270 | 00 | W |
| 272 | 49 | |
| 275 | 38 | W ½ N |
| 278 | 26 | |
| 281 | 15 | W x N |
| 284 | 04 | |
| 286 | 53 | WNW ½ W |
| 289 | 41 | |
| 292 | 30 | WNW |
| 295 | 19 | |
| 298 | 08 | NW x W ½ W |
| 300 | 56 | |
| 303 | 45 | NW x W |
| 306 | 34 | |
| 309 | 23 | NW ½ W |
| 312 | 11 | |
| 315 | 00 | NW |
| 317 | 49 | |
| 320 | 38 | NW ½ N |
| 323 | 26 | |
| 326 | 15 | NW x N |
| 329 | 04 | |
| 331 | 53 | NNW ½ W |
| 334 | 41 | |
| 337 | 30 | NNW |
| 340 | 19 | |
| 343 | 08 | N x W ½ W |
| 345 | 56 | |
| 348 | 45 | N x W |
| 351 | 34 | |
| 354 | 23 | N ½ W |
| 357 | 11 | |

## Table for Estimating Time of Transit

| | Speed (knots) | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 30 |
| | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours | days/ hours |
| **Distance (nautical miles)** | | | | | | | | | | | | | | | | | | | |
| **10** | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | - | - | - | - | - | - |
| **20** | 0/3 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 |
| **30** | 0/4 | 0/3 | 0/3 | 0/3 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 |
| **40** | 0/5 | 0/4 | 0/4 | 0/4 | 0/3 | 0/3 | 0/3 | 0/3 | 0/3 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/1 |
| **50** | 0/6 | 0/6 | 0/5 | 0/5 | 0/4 | 0/4 | 0/4 | 0/3 | 0/3 | 0/3 | 0/3 | 0/3 | 0/3 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 | 0/2 |
| **60** | 0/8 | 0/7 | 0/6 | 0/5 | 0/5 | 0/5 | 0/4 | 0/4 | 0/4 | 0/4 | 0/3 | 0/3 | 0/3 | 0/3 | 0/3 | 0/3 | 0/3 | 0/2 | 0/2 |
| **70** | 0/9 | 0/8 | 0/7 | 0/6 | 0/6 | 0/5 | 0/5 | 0/5 | 0/4 | 0/4 | 0/4 | 0/4 | 0/4 | 0/3 | 0/3 | 0/3 | 0/3 | 0/3 | 0/2 |
| **80** | 0/10 | 0/9 | 0/8 | 0/7 | 0/7 | 0/6 | 0/6 | 0/5 | 0/5 | 0/5 | 0/4 | 0/4 | 0/4 | 0/4 | 0/4 | 0/3 | 0/3 | 0/3 | 0/3 |
| **90** | 0/11 | 0/10 | 0/9 | 0/8 | 0/8 | 0/7 | 0/6 | 0/6 | 0/6 | 0/5 | 0/5 | 0/5 | 0/5 | 0/4 | 0/4 | 0/4 | 0/4 | 0/4 | 0/3 |
| **100** | 0/13 | 0/11 | 0/10 | 0/9 | 0/8 | 0/8 | 0/7 | 0/7 | 0/6 | 0/6 | 0/6 | 0/5 | 0/5 | 0/5 | 0/5 | 0/4 | 0/4 | 0/4 | 0/3 |
| **200** | 1/1 | 0/22 | 0/20 | 0/18 | 0/17 | 0/15 | 0/14 | 0/13 | 0/13 | 0/12 | 0/11 | 0/11 | 0/10 | 0/10 | 0/9 | 0/9 | 0/8 | 0/8 | 0/7 |
| **300** | 1/14 | 1/9 | 1/6 | 1/3 | 1/1 | 0/23 | 0/21 | 0/20 | 0/19 | 0/18 | 0/17 | 0/16 | 0/15 | 0/14 | 0/14 | 0/13 | 0/13 | 0/12 | 0/10 |
| **400** | 2/2 | 1/20 | 1/16 | 1/12 | 1/9 | 1/7 | 1/5 | 1/3 | 1/1 | 1/0 | 0/22 | 0/21 | 0/20 | 0/19 | 0/18 | 0/17 | 0/17 | 0/16 | 0/13 |
| **500** | 2/15 | 2/8 | 2/2 | 1/21 | 1/18 | 1/14 | 1/12 | 1/9 | 1/7 | 1/5 | 1/4 | 1/2 | 1/1 | 1/0 | 0/23 | 0/22 | 0/21 | 0/20 | 0/17 |
| **600** | 3/3 | 2/19 | 2/12 | 2/7 | 2/2 | 1/22 | 1/19 | 1/16 | 1/14 | 1/11 | 1/9 | 1/8 | 1/6 | 1/5 | 1/3 | 1/2 | 1/1 | 1/0 | 0/20 |
| **700** | 3/16 | 3/6 | 2/22 | 2/16 | 2/10 | 2/6 | 2/2 | 1/23 | 1/20 | 1/17 | 1/15 | 1/13 | 1/11 | 1/9 | 1/8 | 1/6 | 1/5 | 1/4 | 0/23 |
| **800** | 4/4 | 3/17 | 3/8 | 3/1 | 2/19 | 2/14 | 2/9 | 2/5 | 2/2 | 1/23 | 1/20 | 1/18 | 1/16 | 1/14 | 1/12 | 1/11 | 1/9 | 1/8 | 1/3 |
| **900** | 4/17 | 4/4 | 3/18 | 3/10 | 3/3 | 2/21 | 2/16 | 2/12 | 2/8 | 2/5 | 2/2 | 1/23 | 1/21 | 1/19 | 1/17 | 1/15 | 1/14 | 1/12 | 1/6 |
| **1000** | 5/5 | 4/15 | 4/4 | 3/19 | 3/11 | 3/5 | 2/23 | 2/19 | 2/15 | 2/11 | 2/8 | 2/5 | 2/2 | 2/0 | 1/21 | 1/19 | 1/18 | 1/16 | 1/9 |
| **2000** | 10/10 | 9/6 | 8/8 | 7/14 | 6/23 | 6/10 | 5/23 | 5/13 | 5/5 | 4/22 | 4/15 | 4/9 | 4/4 | 3/23 | 3/19 | 3/15 | 3/11 | 3/8 | 2/19 |
| **3000** | 15/15 | 13/21 | 12/12 | 11/9 | 10/10 | 9/15 | 8/22 | 8/8 | 7/20 | 7/8 | 6/23 | 6/14 | 6/6 | 5/23 | 5/16 | 5/10 | 5/5 | 5/0 | 4/4 |
| **4000** | 20/20 | 18/21 | 16/16 | 15/4 | 13/21 | 12/20 | 11/22 | 11/3 | 10/10 | 9/19 | 9/6 | 8/19 | 8/8 | 7/22 | 7/14 | 7/6 | 6/23 | 6/16 | 5/13 |
| **5000** | 26/1 | 23/4 | 20/20 | 18/23 | 17/9 | 16/1 | 14/21 | 13/21 | 13/1 | 12/6 | 11/14 | 10/23 | 10/10 | 9/22 | 9/11 | 9/1 | 8/16 | 8/8 | 6/23 |
| **6000** | 31/6 | 27/19 | 25/0 | 22/17 | 20/20 | 19/6 | 17/21 | 16/16 | 15/15 | 14/17 | 13/21 | 13/4 | 12/12 | 11/22 | 11/9 | 10/21 | 10/10 | 10/0 | 8/8 |

## Determination of Wind Speed by Sea Condition

| Miles per hour | Knots | Descriptive | Sea Conditions | Wind Force (Beaufort) | Probable Wave Height (feet) |
|---|---|---|---|---|---|
| 0-1 | 0-1 | Calm | Sea smooth and mirror like | 0 | - |
| 1-3 | 1-3 | Light Air | Scale-like ripples without foam crests | 1 | ¼ |
| 4-7 | 4-6 | Light Breeze | Small, short wavelets; crests have a glassy appearance and do not break. | 2 | ½ |
| 8-12 | 7-10 | Gentle Breeze | Large wavelets; some crests begin to break; foam has glassy appearance. Occasional white foam crests. | 3 | 2 |
| 13-18 | 11-16 | Moderate Breeze | Small waves, become longer; fairly frequent white foam crests. | 4 | 4 |
| 19-24 | 17-21 | Fresh Breeze | Moderate waves, taking a more pronounced long form; many white foam crests; there may be some spray. | 5 | 6 |
| 25-31 | 22-27 | Strong Breeze | Large waves begin to form; white foam crests are more extensive everywhere; there may be some spray. | 6 | 10 |
| 32-38 | 28-33 | Near Gale | Sea heaps up and white foam from breaking waves begin to be blown in streaks along the direction of the wind; spindrift begins. | 7 | 14 |
| 39-46 | 34-40 | Gale | Moderately high waves of greater length; edges of crests break into spindrift; foam is blown in well-marked streaks along the direction of the wind. | 8 | 18 |
| 47-54 | 41-47 | Strong Gale | High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble and roll over; spray may reduce visibility. | 9 | 23 |
| 55-63 | 48-55 | Storm | Very high waves with long overhanging crests. The resulting foam in great patches is blown in dense white streaks along the direction of the wind. On the whole, the surface of the sea is white in appearance. The tumbling of the sea becomes heavy and shock-like. Visibility is reduced. | 10 | 29 |
| 64-72 | 56-63 | Violent Storm | Exceptionally high waves that may obscure small and medium-sized ships. The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere the edges of the wave crests are blown into froth. Visibility is reduced. | 11 | 37 |
| 73+ | 64+ | Hurricane | The air is filled with foam and spray. Sea completely white with driving spray; visibility is very much reduced. | 12 | 45 |

## Standard Abbreviations Used In Broadcasts

| Aids to Navigation | |
|---|---|
| Aeronautical Radiobeacon | AERO RBN |
| Articulated Daybeacon | ART DBN |
| Articulated Light | ART LT |
| Destroyed | DESTR |
| Discontinued | DISCONTD |
| Established | ESTAB |
| Exposed Location Buoy | ELB |
| Fog Signal Station | FOG SIG |
| Large Navigation Buoy | LNB |
| Light | LT |
| Light List Number | LLNR |
| Lighted Bell Buoy | LBB |
| Lighted Buoy | LB |
| Lighted Gong Buoy | LGB |
| Lighted Horn Buoy | LHB |
| Lighted Whistle Buoy | LWB |
| Ocean Data Acquisition System | ODAS |
| Privately Maintained | PRIV MAINTD |
| Radar Beacon | RACON |
| Radar Reflector | RA REF |
| Temporarily Replaced by Unlighted Buoy | TRUB |
| Temporarily Replaced by Lighted Buoy | TRLB |
| Whistle | WHIS |
| **Light Characteristics** | |
| Alternating | AL |
| Characteristic | CHAR |
| Composite Group-Flashing | FL(2+1) |
| Composite Group-Occulting | OC(2+1) |
| Continuous Quick-Flashing | Q |
| Fixed and Flashing | FFL |
| Fixed | F |
| Group-Flashing | FL(3) |
| Group-Occulting | OC(2) |
| Interrupted Quick-Flashing | IQ |
| Isophase | ISO |
| Morse Code | MO(A) |
| Occulting | OC |
| Single-Flashing | FL |
| **Colors[1]** | |
| Black | B |
| Blue | BU |
| Green | G |
| Orange | OR |
| Red | R |
| White | W |
| Yellow | Y |

| Organizations | |
|---|---|
| Commander, Coast Guard District (#) | CCGD(#) |
| Coast Guard | CG |
| Corps of Engineers | COE |
| National Geospatial-Intelligence Agency | NGA |
| National Ocean Service | NOS |
| National Weather Service | NWS |
| **Vessels** | |
| Aircraft | A/C |
| Fishing Vessel | F/V |
| Liquefied Natural Gas Carrier | LNG |
| Motor Vessel[2] | M/V |
| Pleasure Craft | P/C |
| Research Vessel | R/V |
| Sailing Vessel | S/V |
| **Compass Directions** | |
| North | N |
| South | S |
| East | E |
| West | W |
| Northeast | NE |
| Northwest | NW |
| Southeast | SE |
| Southwest | SW |
| **Months** | |
| January | JAN |
| February | FEB |
| March | MAR |
| April | APR |
| May | MAY |
| June | JUN |
| July | JUL |
| August | AUG |
| September | SEP |
| October | OCT |
| November | NOV |
| December | DEC |
| **Days of the Week** | |
| Monday | MON |
| Tuesday | TUE |
| Wednesday | WED |
| Thursday | THU |
| Friday | FRI |
| Saturday | SAT |
| Sunday | SUN |

[1] Color refers to light characteristics of Aids to Navigation only
[2] M/V includes: Steam Ship, Container Vessel, Cargo Vessel, etc.

**Standard Abbreviations Used In Broadcasts** (continued)

| Countries and States | |
|---|---|
| Alabama | AL |
| Alaska | AK |
| American Samoa | AS |
| Arizona | AZ |
| Arkansas | AR |
| California | CA |
| Canada | CN |
| Colorado | CO |
| Connecticut | CT |
| Delaware | DE |
| District of Columbia | DC |
| Florida | FL |
| Georgia | GA |
| Guam | GU |
| Hawaii | HI |
| Idaho | ID |
| Illinois | IL |
| Indiana | IN |
| Iowa | IA |
| Kansas | KS |
| Kentucky | KY |
| Louisiana | LA |
| Maine | ME |
| Maryland | MD |
| Marshall Islands | MH |
| Massachusetts | MA |
| Mexico | MX |
| Michigan | MI |
| Minnesota | MN |
| Mississippi | MS |
| Missouri | MO |
| Montana | MT |
| Nebraska | NE |
| Nevada | NV |
| New Hampshire | NH |
| New Jersey | NJ |
| New Mexico | NM |
| New York | NY |
| North Carolina | NC |
| North Dakota | ND |
| Northern Mariana Islands | MP |
| Ohio | OH |
| Oklahoma | OK |
| Oregon | OR |
| Pennsylvania | PA |
| Puerto Rico | PR |
| Rhode Island | RI |
| South Carolina | SC |
| South Dakota | SD |
| Tennessee | TN |
| Texas | TX |
| United States | US |
| Utah | UT |
| Vermont | VT |
| Virgin Islands | VI |
| Virginia | VA |
| Washington | WA |
| West Virginia | WV |
| Wisconsin | WI |
| Wyoming | WY |

| Various | |
|---|---|
| Anchorage | ANCH |
| Anchorage Prohibited | ANCH PROHIB |
| Approximate | APPROX |
| Atlantic | ATLC |
| Authorized | AUTH |
| Average | AVG |
| Bearing | BRG |
| Breakwater | BKW |
| Broadcast Notice to Mariners | BNM |
| Channel | CHAN |
| Code of Federal Regulations | CFR |
| Continue | CONT |
| Degrees (temp; geo pos) | DEG |
| Diameter | DIA |
| Edition | ED |
| Effect/Effective | EFF |
| Entrance | ENTR |
| Explosive Anchorage | EXPLOS ANCH |
| Fathom(s) | FM(S) |
| Foot/Feet | FT |
| Harbor | HBR |
| Height | HT |
| Hertz | HZ |
| Horizontal Clearance | HOR CL |
| Hour | HR |
| International Regulations for Preventing Collisions at Sea | COLREGS |
| Kilohertz | KHZ |
| Kilometer | KM |
| Knot(s) | KT(S) |
| Latitude | LAT |
| Local Notice to Mariners | LNM |
| Longitude | LONG |
| Maintained | MAINTD |
| Maximum | MAX |
| Megahertz | MHZ |
| Millibar | MB |

**Standard Abbreviations Used In Broadcasts** (continued)

| Various (continued) | |
|---|---|
| Millimeter | MM |
| Minute (time; geographic position) | MIN |
| Moderate | MOD |
| Mountain, Mount | MT |
| Nautical Mile(s) | NM |
| Notice to Mariners | NTM |
| Obstruction | OBSTR |
| Occasion/Occasionally | OCCASION |
| Operating Area | OPAREA |
| Pacific | PAC |
| Point(s) | PT(S) |
| Position | POS |
| Position Approximate | PA |
| Pressure | PRES |
| Private/Privately | PRIV |
| Prohibited | PROHIB |
| Publication | PUB |
| Range | RGE |
| Reported | REP |
| Restricted | RESTR |

| | |
|---|---|
| Rock | RK |
| Saint | ST |
| Second (time; geographic position) | SEC |
| Signal Station | SIG STA |
| Station | STA |
| Statute Mile(s) | SM |
| Storm Signal Station | S SIG STA |
| Temporary | TEMP |
| Thunderstorm | TSTORM |
| Through | THRU |
| True | T |
| Uncovers; Dries | UNCOV |
| Universal Coordinate Time | UTC |
| Urgent Marine Information Broadcast | UMIB |
| Velocity | VEL |
| Vertical Clearance | VERT CL |
| Visibility | VIS |
| Yard(s) | YD |
| Warning | WARN |
| Weather | WX |
| Wreck | WK |

## Conversion Factors

| | Known Value | Multiply By | Unknown Value |
|---|---|---|---|
| Linear | inches | 25.40 | millimeters |
| | | 2.540 | centimeters |
| | centimeters | 0.032808 | feet |
| | feet | 30.48 | centimeters |
| | | 0.3048 | meters |
| | | 0.00016458 | nautical miles |
| | yard | 0.9144 | meters |
| | meters | 3.2808 | feet |
| | | 1.094 | yards |
| | | 0.0005399 | nautical miles |
| | statute miles | 0.86897 | nautical miles |
| | | 1.6093 | kilometers |
| | | 1,609.3 | meters |
| | nautical miles | 1.151 | statute miles |
| Area | square feet | 0.0929 | square meters |
| | | 0.00002296 | acres |
| | square meters | 10.764 | square feet |
| | | 0.0002471 | acres |
| | acres | 4,046.9 | square meters |
| | | 43,560 | square feet |
| | | 0.404685 | hectare |
| | hectare | 2.471054 | acres |
| | | 10,000 | square meters |
| | | $1.07639 \times 10^5$ | square feet |
| Depths | fathoms | 1.8288 | meters |
| | meters | 0.54681 | fathoms |
| | | 3.2808 | feet |
| | feet | 0.3048 | meters |
| Rate | feet per second | 0.5925 | knots |
| | | 0.6818 | miles per hour |
| | | 30.48 | centimeters per second |
| | statute miles per hour | 0.8689 | knots |
| | | 1.467 | feet per second |
| | | 0.447 | meters per second |
| | knots | 1.151 | miles per hour |
| | | 0.5144 | meters per second |
| | | 1.6878 | feet per second |
| | centimeters per second | 0.01944 | knots |
| | | 0.02237 | miles per hour |
| | | 0.032808 | feet per second |
| Mass | grams | 0.035275 | ounces |
| | | 0.002205 | pounds |
| | ounces | 28.349 | grams |
| | pounds | 0.45359 | kilograms |
| | short tons | 2,000 | pounds |
| | | 0.89286 | long tons |
| | | 0.9072 | metric tons |
| Mass | long tons | 2,240 | pounds |
| | | 1.12 | short tons |
| | | 1.016 | metric tons |
| | metric tons | 1,000 | kilograms |
| | | 0.9842 | long tons |
| | | 1.1023 | short tons |
| | | 2,204.6 | pounds |
| Volume | barrels (petroleum) | 42 | gallons (US) |
| | | 158.99 | liters |
| | barrels (liquid, US) | 31.5 | gallons (US) |
| | | 26.229 | gallons (British) |
| | | 119.24 | liters |
| | gallons (US) | 0.02381 | barrels (petroleum) |
| | | 3.7854 | liters |
| | liters | 0.26417 | gallons (US) |

## Measurements and Equivalencies

| Unit | Equivalency |
|---|---|
| nautical mile | 1,852 meters<br>6,076.12 feet |
| statute mile | 5,280 feet<br>1,609.3 meters<br>1.6093 kilometers |
| cable | 0.1 nautical mile (CN)<br>720 feet (US) |
| fathom | 6 feet<br>1.8288 meters |
| foot | 0.3048 meter |
| inch | 2.54 centimeters |
| meter | 39.37 inches<br>3.281 feet<br>1.0936 yards |
| kilometer | 1,000 meters |
| knot | 1.6877 feet per second<br>0.5144 meters per second |
| miles per hour (statute) | 1.466 feet per second<br>0.44704 meters per second |
| acre | 43,560 square feet<br>4,046.82 square meters |
| pound (avoirdupois) | 453.59 gram |
| gram | 0.0022046 pound (avoirdupois)<br>0.035274 ounce |
| short ton | 2,000 pounds |
| long ton | 2,240 pounds |
| metric ton | 2,204.6 pounds |
| kilogram | 2.2 pounds |
| liter | 1.0567 quarts |
| barrel (petroleum) | 42 gallons (US) |

# List of Critical Updates

| Date | Action | Section | Comments |
|---|---|---|---|
| | | | |

# Index

## A


Academy Creek 11506 . . . . . 282
Acme . . . . . 233
Adams Creek 11522 . . . . . 258
Adams Creek 11552 . . . . . 213
Adams Creek Canal 11541 . . . . . 363
Adams Key 11463 . . . . . 344
Agriculture, Department of. . . . 32, 407
Aids to navigation . . . . . 9, 171
Air Almanac . . . . . 403
Aircraft procedures for directing surface craft . . . . . 14
Albemarle and Chesapeake Canal 12206359
Albemarle Sound 12204, 12205 . . . 203
Albemarle Sound Herring Management Area, MPA . . . . . 203
Albergottie Creek 11518 . . . . . 368
Alligator Bay 11541 . . . . . 364
Alligator Creek 11488 . . . . . 291
Alligator Reef Light 11449 . . . . . 345
Alligator River 11553 . . . . . 362
Alligator River 12205 . . . . . 206
Alligator River-Pungo River Canal 11553 . . . . . 362
Allison Island 11467 . . . . . 391
Altamaha River 11507 . . . . . 370
Altamaha River 11508 . . . . . 281
Altamaha Sound 11507 . . . . . 370
Altamaha Sound 11508 . . . . . 280
Alva 11428 . . . . . 384
Amelia City 11489 . . . . . 372
Amelia Island 11488 . . . . . 291
Amelia Island Light 11503 . . . . . 287
Amelia River 11489 . . . . . 371
Amelia River 11503 . . . . . 288
Amendments . . . . . 1
American Practical Navigator (Bowditch) . . . . . 404
American Shoal Light 11445 . . . . 348
AMVER Reporting Required . . . . . 39
Anastasia Island 11485 . . . . . 373
Anastasia Island 11488 . . . . . 314
Anchorage Regulations . . . . . 70
Anchorages . . . . . 173
Andrews Island 11506 . . . . . 282
Angelfish Creek 11463. . . . . 344, 394
Angelfish Key 11463 . . . . . 394
Animal and Plant Health Inspection Service . . . . . 32, 407
Animal Import Centers . . . . . 408
Antilles Current . . . . . 181
Archers Creek 11516 . . . . . 263
Areas To Be Avoided (ATBAs) . . . . 342
Area to Be Avoided Off the Coast of Florida . . . . . 173
Army Corps of Engineers (USACE). . . 36
Articulated daybeacons . . . . . 10
Articulated lights. . . . . 10
Ashepoo-Combahee-Edisto (ACE) Basin National Estuarine Research Reserve, MPA . . . . . 259
Ashepoo River 11517 . . . . . 259
Ashepoo River 11518 . . . . . 368
Ashley Creek 11511 . . . . . 278
Ashley River 11524 . . . . . 252
Astor 11495 . . . . . 309
Astronomical Almanac . . . . . 403
Atlantic 11550 . . . . . 216
Atlantic Beach 11541 . . . . . 363
Atlantic Heights 11467 . . . . . 391
Atwood Creek 11510 . . . . . 280
Audubon 11484 . . . . . 377
Augusta 11515 . . . . . 269
Aurora 11554 . . . . . 210
Austin Creek 11555 . . . . . 201
Automated Mutual-assistance Vessel Rescue System (AMVER). . . . . 38
Avalon Beach 12204. . . . . 203
Avoca 12205. . . . . 205
Avon 11555 . . . . . 208


## B


Back Bay 12207 . . . . . 202
Back Creek 11554 . . . . . 211
Back River 11506. . . . . 285
Back River 11507. . . . . 370
Back River 11510. . . . . 280
Back Sound 11545 . . . . . 217
Bacom Point 11428 . . . . . 382
Bahia Honda Channel (Bahia Honda) 11445 . . . . . 347
Bahia Honda Channel (Bahia Honda) 11449 . . . . . 396
Bahia Honda Key 11445 . . . . . 347
Baker Cut 11464 . . . . . 394
Bakers Haulover Inlet 11467 . . 333, 391
Bald Head Shoal 11537 . . . . . 229
Bal Harbour 11467 . . . . . 391
Banana River 11472, 11481, 11484, 11476 . . . . . 376
Bank Blink . . . . . 172, 342
Banks Channel 11541 . . . . . 227
Barden Inlet 11545 . . . . . 202
Barden Inlet Crab Spawning Sanctuary, MPA . . . . . 202
Barnes Sound 11463 . . . . . 394
Batchelor Bay 12205 . . . . . 205
Bath Creek 11554 . . . . . 211
Battery Creek 11516 . . . . . 262
Bayboro 11552. . . . . 213
Bay Front Park 11465 . . . . . 343
Bay Front Park 11467 . . . . . 338
Bay Harbor Islands 11467 . . . . . 391
Bay Point 11516 . . . . . 261
Bay Point 11517 . . . . . 258
Bay River 11548, 11552 . . . . . 212
Bay River 11553 . . . . . 362
Bayview 11554 . . . . . 211
Beach Creek 11503 . . . . . 290
Beach Hammock 11512 . . . . . 276
Bear Creek 11495 . . . . . 309
Bear Cut 11467 . . . . . 392
Beard Creek 11552 . . . . . 214
Bearings . . . . . 1
Bear Inlet 11543 . . . . . 226
Bear River 11507 . . . . . 370
Bear River 11511 . . . . . 278
Beasley Bay 12204, 12205 . . . . . 203
Beaufort 11516 . . . . . 263
Beaufort 11518 . . . . . 368
Beaufort 11547 . . . . . 225
Beaufort Channel 11547 . . . . . 225
Beaufort Inlet 11547 . . . . . 222
Beaufort River 11516 . . . . . 262
Beaufort River 11518 . . . . . 368
Belfast 11511 . . . . . 278
Belfast River 11511 . . . . . 278
Belhaven 11548 . . . . . 210
Belhaven 11553 . . . . . 362
Bellamys Landing . . . . . 242
Belle Glade 11428 . . . . . 383
Belle Isle Garden 11532 . . . . . 241
Bells River 11503, 11502. . . . . 291
Bends . . . . . 179
Bennetts Creek 12205 . . . . . 204
Beresford 11498 . . . . . 309
Beresford Creek 11524 . . . . . 254
Bethel Bank 11449 . . . . . 396
Bethel Creek 11472 . . . . . 379
Bethel Shoal 11476 . . . . . 320
Big Bay Creek 11517 . . . . . 259
Big Foot Slough Channel 11550. . . 201
Big Pine Key 11445 . . . . . 347
Big Porpoise Bay 11548 . . . . . 212
Big Spanish Channel 11448, 11442 . 396
Bird Island 11535 . . . . . 238
Bird Key 11522 . . . . . 258
Biscayne Bay 11467. . . . . 390
Biscayne Channel 11465 . . . . . 343
Biscayne Creek 11467 . . . . . 390
Biscayne National Park 11451. . . . 393
Biscayne National Park, MPA 11451 . 344
Biscayne Point 11467 . . . . . 391
Blackbank River 11506 . . . . . 281
Blackbeard Creek 11510 . . . . . 279
Blackbeard Island 11510 . . . . . 279
Blackbeard Island National Wildlife Refuge 11507 . . . . . 279
Black Creek 11492 . . . . . 306
Black River . . . . . 233, 242
Black Rock 11503 . . . . . 291
Blackwater River . . . . . 205
Blackwater Sound 11463, 11464. . . 394
Blount Island 11491 . . . . . 303
Blount Island Channel 11491 . . . . 303
Blounts Bay 11554 . . . . . 211
Blounts Creek 11554 . . . . . 211
Blue Springs Run 11498 . . . . . 310
Bluff Point 11548. . . . . 208

Bluff Shoal 11548 . . . . . 207, 209
Bluffton 11516. . . . . 264
Boca Chica Channel 11446 . . . . . 348
Boca Chica Key 11446, 11441. . . . 348
Boca Chita Key 11465 . . . . . 393
Boca Raton 11466 . . . . . 327
Boca Raton 11467 . . . . . 387
Boca Raton Inlet 11467 . . . . 327, 387
Bodie Island Light 12204 . . . . . 199
Bogue Banks 11543. . . . . 225
Bogue Inlet 11541 . . . . . 364
Bogue Inlet 11543 . . . . . 225
Bogue Sound 11541 . . . . . 363
Bogue Sound 11543 . . . . . 225
Bohicket Creek 11522 . . . . . 258
Bond Creek 11554 . . . . . 210
Boot Key 11449 . . . . . 346
Boot Key Harbor 11449 . . . . . 346
Bow Channel 11445. . . . . 348
Bowen Point 11534 . . . . . 365
Bowlegs Cut 11449 . . . . . 395
Bowles Bank Anchorage 11465 . . . 344
Boynton Beach 11467 . . . . . 387
Boynton Inlet 11467 . . . . . 327, 387
Bradley Creek 11541 . . . . . 364
Bradley Point 11511 . . . . . 277
Brant Island Shoal 11548 . . . . . 212
Breach Inlet 11518 . . . . . 367
Breach Inlet 11521 . . . . . 244
Brice Creek 11552 . . . . . 215
Brickhill River 11504 . . . . . 287
Brickyard Creek 11518 . . . . . 368
Brickyard Creek 11519 . . . . . 263
Bridge and cable clearances . . . . . 7
Bridge lights and clearance gages . . . 11
Bridge of Lions 11485 . . . . . 373
Bridges. . . . . 1
Bridgeton 11552 . . . . . 215
Brighton Beach 11516. . . . . 264
Broadcast Abbreviations . . . . . 20
Broad Creek 11516 . . . . . 264
Broad Creek 11548 . . . . . 213
Broad Creek 11553 . . . . . 362
Broad Creek 11554 . . . . . 211
Broad River 11516 . . . . . 263
Broomfield Creek 11519 . . . . . 263
Broro River 11510 . . . . . 279
Broward River 11491 . . . . . 304
Brown Creek 11548. . . . . 213
Browns Inlet 11543. . . . . 226
Brunswick 11489. . . . . 371
Brunswick 11506. . . . . 281
Brunswick Harbor 11506 . . . . . 282
Brunswick Harbor Navigational Guidelines . . . . . 282
Brunswick Point 11506 . . . . . 282
Brunswick River 11489 . . . . . 371
Brunswick River 11506 . . . . . 282
Buckingham Landing 11516 . . . . 264
Buck Point 11476 . . . . . 377
Buck Point 11516 . . . . . 264
Bucksport 11534 . . . . . 367
Buffalo Bluff 11495 . . . . . 308
Bull Bay 12205. . . . . 206
Bull Breakers 11531 . . . . . 243
Bull Creek 11516. . . . . 264
Bull Creek 11531. . . . . 243
Bull Island 11531. . . . . 243
Bull Narrows 11531. . . . . 243
Bull River 11512 . . . . . 276
Bull River 11519 . . . . . 259
Bulls Bay 11518 . . . . . 367
Bulls Bay 11531 . . . . . 243
Bunton Creek (Bull Creek) 12205 . . 206
Buoys . . . . . 10
Burdette . . . . . 205
Burnside River 11512 . . . . . 277
Burnt Fort 11504. . . . . 287
Buttermilk Sound 11507. . . . . 370
Buttermilk Sound 11508. . . . . 281
Buttonwood (Flamingo) Canal 11433. 345
Buttonwood Sound 11464 . . . . . 394
Buxton 11555 . . . . . 208
Buzzard Roost Creek 11510 . . . . 280

## C

Cable clearances . . . . . 7
Cable ferries. . . . . 2
Cabretta Inlet 11510 . . . . . 279
Caesar Creek 11462. . . . . 344
Caesar Creek 11463. . . . . 394
Caesar Creek Bank 11462 . . . . . 344
Caesar Creek Bank Anchorage 11462. 344
Cainhoy 11524. . . . . 254
Calabash 11534 . . . . . 366
Calabash River 11534 . . . . . 366
Calda Channel 11441 . . . . . 350
Calibogue Sound 11507 . . . . . 369
Calibogue Sound 11512 . . . . . 264
Calico Creek 11545, 11541 . . . . . 363
Caloosahatchee Canal 11428 . . . . 383
Caloosahatchee River 11428 . . . . 384
Canal, Estherville-Minim Creek 11534 367
Canal, Fairfield 11553 . . . . . 362
Canal Point 11428 . . . . . 383
Canaveral Barge Canal 11485, 11484 . 376
Canaveral Bight 11484, 11481 . . . 317
Canaveral National Seashore, MPA. . 317
Canaveral Peninsula 11476, 11484, 11481 . . . . . 317
Cape Canaveral 11478 . . . . . 317
Cape Canaveral 11484, 11481, 11478 . 317
Cape Canaveral Air Force Station 11484 . . . . . 317
Cape Channel (Buxton Harbor Channel) 11555 . . . . . 208
Cape Fear 11536 . . . . . 228
Cape Fear River 11537. . . . . 228
Cape Florida 11465 . . . . . 343
Cape Florida Anchorage 11465 . . . 343
Cape Hatteras 11555 . . . . . 200
Cape Hatteras National Seashore, MPA 207
Cape Island 11531 . . . . . 243
Cape Lookout 11544 . . . . . 202
Cape Lookout National Seashore, MPA 202
Cape Lookout Shoals 11544 . . . . 202
Cape Romain 11531. . . . . 243
Cape Romain Harbor 11531 . . . . 243
Cape Romain National Wildlife Refuge 11518 . . . . . 367
Cape Romain National Wildlife Refuge, MPA . . . . . 243
Cape Romain Shoal 11531 . . . . . 243
Capers Creek 11518. . . . . 367
Capers Creek 11521. . . . . 243
Capers Inlet 11521 . . . . . 243
Capers Island 11521 . . . . . 243
Capron Shoal 11474 . . . . . 323
Card Bank 11463 . . . . . 394
Card Point Cut 11463 . . . . . 394
Card Sound 11463 . . . . . 394
Cargo Care . . . . . 193
Carnigan River 11510 . . . . . 280
Carolina Beach 11539 . . . . . 227
Carolina Beach Inlet 11539. . . . . 227
Carysfort Reef Light 11462 . . . . . 344
Cashie River 12205 . . . . . 205
Casino Creek 11531. . . . . 243
Casino Creek 11534. . . . . 367
Castillo de San Marcos 11488 . . . . 315
Castle Hayne . . . . . 233
Catfish Point 11545. . . . . 202
Catherine Creek 12205 . . . . . 205
Cedar Creek 11506 . . . . . 286
Cedar Island Bay 11550 . . . . . 216
Cedar River 11492 . . . . . 305
Center for Operational Oceanographic Products and Services (CO-OPS) . . . . . 33
Chaney Creek 11542 . . . . . 227
Channel Five 11449. . . . . 345, 396
Channel Key Banks 11449 . . . . . 396
Channel Key Pass 11449 . . . . . 396
Channel Two 11449. . . . . 396
Charleston 11518. . . . . 367
Charleston 11524. . . . . 244
Charleston Bump Closed Area-Highly Migratory Species, MPA. . . 248
Charleston Harbor 11518 . . . . . 367
Charleston Harbor 11523, 11524 . . 244
Charleston Harbor Navigational Guidelines . . . . . 244
Charleston Harbor Wildlife Sanctuary, MPA . . . . . 244
Charleston Light 11524 . . . . . 244
Chart Datum . . . . . 3
Chart Numbering System . . . . . 7
Chart Projections. . . . . 3
Charts and Publications–Other U.S. Government Agencies . . . . . 403
Charts, Publications, and Services-NOAA . . . . . 401
Chart symbols and abbreviations . . . 3
Chechessee River 11516 . . . . . 263
Cherry . . . . . 206
Cherry Ridge Landing 12205 . . . . 206

Chester 11503 . . . . . 291
Chester Shoal 11484 . . . . . 317
Chicamacomico Channel 12204 . . . 207
Chimney Creek 11512, 11505 . . . . 276
Chisolm 11519 . . . . . 259
Chocowinty Bay 11554 . . . . . 211
Chowan River 12205 . . . . . 204
Christmas Creek 11502 . . . . . 287
Christopher Creek 11488 . . . . . 291
Citizenship and Immigration Services . 38
Citrus Center 11428 . . . . . 384
City of Miami Miamarina 11467 . . . 338
City Point 11485 . . . . . 376
Clark Creek 11531 . . . . . 243
Claughton Island 11467 . . . . . 392
Clean Water Act . . . . . 23
Clewiston 11428 . . . . . 383
Clubbs Creek 11506 . . . . . 285
Clubfoot Creek 11552 . . . . . 213
Coastal Warning Display . . . . . 36
Coast Guard . . . . . 38
Coast Guard District Offices . . . . 404
Coast Guard droppable, floatable pumps 17
Coast Guard Radio Broadcasts . . . 406
Coast Guard radio stations . . . . . 19
Coast Guard Sector Offices . . . . . 405
Coast Guard Stations . . . . . 405
Coast Guard vessels, warning signals . . 27
Coast Pilot . . . . . 1, 401
Cockspur Island 11512 . . . . . 276
Cocoa 11485 . . . . . 376
Cocoa Beach 11476, 11481 . . . . . 320
Coconut Grove 11467 . . . . . 393
Coffin Creek 11517 . . . . . 260
Coinjock 12206 . . . . . 359
Coinjock Bay 12206 . . . . . 359
Cold Fronts . . . . . 183
Colerain 12205 . . . . . 205
Colerain Landing 12205 . . . . . 205
Colleton River 11516 . . . . . 264
Collins Canal 11467 . . . . . 391
Colonels Island 11511 . . . . . 278
COLREGS Demarcation Lines . . 68, 171
Columbia 12205 . . . . . 206
Combahee River 11519 . . . . . 259
Commerce, Department of . . . . . 33
Commodore Island 11510 . . . . . 280
Community Harbor 11464 . . . . . 395
Compass roses on charts . . . . . 8
Conch Bar 11472 . . . . . 385
Conch Keys 11449 . . . . . 396
Congaree River 11531 . . . . . 242
Continment Bluff 11510 . . . . . 279
Convoy Point 11463 . . . . . 394
Conway . . . . . 242
Cooper River 11507 . . . . . 369
Cooper River 11512 . . . . . 264
Cooper River 11524 . . . . . 253
Coosawhatchie River 11519 . . . . 263
Coosaw River 11517 . . . . . 259
Coosaw River 11518 . . . . . 368
Copps Landing 11516 . . . . . 263
Coquina . . . . . 171
Coral Gables 11467 . . . . . 393
Coral Gables Waterway 11467 . . . . 393
Core Creek 11541 . . . . . 363
Core Sound 11550, 11545 . . . . . 215
Corolla 12204 . . . . . 198
Corps of Engineers, U.S. Army . . . 404
COSPAS-SARSAT system . . . . . 19
Cow Channel 11541 . . . . . 364
Cowen (Chowan) Creek 11516 . . . 262
Cow Key Channel 11446 . . . . . 349
Cowpens Anchorage 11464 . . . . . 395
Cowpens Cut 11464 . . . . . 395
Crandon Park Marina Channel 11467 392
Crane Creek 11472 . . . . . 378
Crawl Key 11449 . . . . . 346
Creighton Narrows 11507 . . . . . 370
Creighton Narrows 11510 . . . . . 279
Crescent Beach 11485 . . . . . 373
Crescent Beach 11486 . . . . . 316
Crescent City 11487 . . . . . 307
Crescent Lake 11487 . . . . . 307
Creswell 12205 . . . . . 206
Croatan Sound 12204 . . . . . 207
Crooked River 11504 . . . . . 287
Crooms Bridge . . . . . 233
Cross Bank 11464 . . . . . 395
Cross Florida Greenway 11495, 11408 308
Cross Key 11463, 11464 . . . . . 394
Cross Tide Creek 11510 . . . . . 279
Crow Point 12205 . . . . . 204
Crows Bluff 11498 . . . . . 309
Cruising schedules . . . . . 14
Cudjoe Channel 11448 . . . . . 347
Cudjoe Key 11445 . . . . . 348
Cumberland Dividings 11504 . . . . 287
Cumberland Island 11489 . . . . . 371
Cumberland Island 11502 . . . . . 287
Cumberland Island National Seashore, MPA . . . . . 287
Cumberland River 11489 . . . . . 371
Cumberland River 11504 . . . . . 287
Cumberland Sound 11503 . . . . . 287
Currents . . . . . 2, 181
Currituck 12206 . . . . . 359
Currituck Beach Light 12204 . . 198, 203
Currituck Sound 12206 . . . . . 359
Currituck Sound 12207, 12204 . . . 202
Curves . . . . . 179
Customs and Border Protection . . . . 39
Customs Ports of Entry and Stations . 407
Cutler Channel 11415 . . . . . 393
Cutter Bank 11463 . . . . . 394

## D

Dallas Bluff . . . . . 279
Damage to Aids to Navigation . . . . . 68
Dangers . . . . . 173
Danger signal . . . . . 27
Dania 11467 . . . . . 390
Dania Beach 11467 . . . . . 390
Dania Cut-Off Canal 11467 . . . . . 389
Dan River . . . . . 205
Darien 11510 . . . . . 280
Darien River 11507 . . . . . 370
Darien River 11510 . . . . . 280
Daufuskie Island 11512 . . . . . 264
Davis 11545 . . . . . 216
Dawho River 11517 . . . . . 259
Dawho River 11518 . . . . . 368
Dawho River 11522 . . . . . 258
Dawson Creek 11552 . . . . . 213
Daylight saving time . . . . . 194
Daytona Beach 11485 . . . . . 374
Daytona Beach 11486 . . . . . 316
Dead Lake 11487 . . . . . 308
Deep Bay 11548 . . . . . 209
Deep Creek 12205 . . . . . 206
Deep Creek 12206 . . . . . 360
Deerfield Beach 11467 . . . . . 387
Defense, Department of . . . . . 36
Delegal Creek 11507 . . . . . 370
De Leon Springs 11498 . . . . . 309
Delespine 11485 . . . . . 376
Delray Beach 11467 . . . . . 387
Denaud 11428 . . . . . 384
Department of Agriculture . . . . 32, 407
Department of Commerce . . . . . 33
Department of Defense . . . . . 36
Department of Health and Human Services . . . . . 37
Department of Homeland Security . . . 38
Depths . . . . . 2, 172
Designated Critical Habitat . . . . . 170
Dewees Creek 11518 . . . . . 367
Dewees Creek 11521 . . . . . 243
Dewees Inlet 11521 . . . . . 243
Dewees Island 11518 . . . . . 367
Dewees Island 11521 . . . . . 243
Dewey Point 11552 . . . . . 213
Dew Point . . . . . 193
Dexter Point 11498 . . . . . 309
Diamond Shoals 11555 . . . . . 200
Dinner Key 11467 . . . . . 393
Dinner Key Channel 11467 . . . . . 393
Dismals . . . . . 171
Disposal areas . . . . . 8
Disposal Sites . . . . . 8
Distances . . . . . 2
Distress: Communication Procedures . 12
Ditch Creek 11548 . . . . . 212
Doboy Island 11510 . . . . . 280
Doboy Sound 11507 . . . . . 370
Doboy Sound 11510 . . . . . 279
Doctors Inlet 11492 . . . . . 305
Doctors Lake 11492 . . . . . 305
Documentation . . . . . 39
Dover Creek 11489 . . . . . 371
Dover Cut 11489 . . . . . 371
Drawbridge Operation Regulations . . 75
Drayton Island 11495 . . . . . 309
Drum Creek 11548 . . . . . 212

Drum Island 11524 . . . . . 253
Drummond Point 11491 . . . . . 304
Drummond Point 12205 . . . . . 204
Dry Tortugas 11438 . . . . . 174
Duck 12205 . . . . . 198
Duck Key 11449 . . . . . 346
Dumfoundling Bay 11467 . . . . . 390
Dumping Grounds . . . . . 8
Dumping of dredged material . . . . . 40
Dungeness 11489. . . . . 371
Dunns Creek 11487 . . . . . 307
Duplin River 11510 . . . . . 280
Dupree Creek 11506 . . . . . 285
Durham Creek 11554 . . . . . 211
Dusenbury Creek 11464 . . . . . 394

## E

East Bank 11532 . . . . . 239
East Bluff Bay 11548 . . . . . 208
East Branch 11527 . . . . . 253
East Lake 11553 . . . . . 362
East Lake 12204, 12205 . . . . . 206
East River 11506 . . . . . 282
East Sister Rock 11449 . . . . . 346
East Tocoi 11492 . . . . . 307
East Turtle Shoal 11449 . . . . . 346
Eau Gallie River 11472 . . . . . 378
Echo soundings . . . . . 8
Edding Creek 11517 . . . . . 260
Edenton 12205. . . . . 204
Edenton Bay 12205 . . . . . 204
Edgewater 11487 . . . . . 307
Edisto Beach 11517. . . . . 259
Edisto Beach State Park 11517 . . . 259
Edisto Island 11517. . . . . 258
Edisto River 11517 . . . . . 259
Egg Island 11507. . . . . 370
Elba Island 11512 . . . . . 265
Elba Island Cut 11507. . . . . 369
Eldora 11484 . . . . . 317
Electronic Navigational Chart . . . . 9
Electronic Positioning Systems . . . . 12
Elizabeth City 12206 . . . . . 361
Elliott Cut 11518. . . . . 368
Elliott Cut 11522. . . . . 258
Elliott Key 11463. . . . . 344
Elliott Key 11463, 11465. . . . . 393
Elliott Key 11465. . . . . 344
Elliott Key Harbor 11463 . . . . . 393
Elliotts Bluff 11504 . . . . . 287
El Radabob Key 11462, 11464. . . . 345
Emergency Position Indicating Radiobeacons (EPIRBs) . . . . . 17
Endangered Marine and Anadromous Species . . . . . 168
Engelhard 11555 . . . . . 208
Enterprise 11498 . . . . . 310
Enterprise Landing 11534 . . . . . 367
Entrada Channel 11467 . . . . . 393
Environmental Protection Agency (EPA) 40
Estherville-Minim Creek Canal 11534 367
Eureka Lock and Dam 11495 . . . . 308
Everglades National Park 11433 . 345, 394
Everglades National Park, MPA 11433 343
Experiment Shoal 11510. . . . . 279
Extratropical Cyclones . . . . . 183

## F

Faber Point 11475 . . . . . 321
Factory Creek 11516 . . . . . 263
Fairfield Canal 11553 . . . . . 362
Fairfield Harbour 11552 . . . . . 214
False Cape 11484. . . . . 317
False Cape 12207. . . . . 198
Fancy Bluff Creek 11506 . . . . . 285
Far Creek 11555 . . . . . 208
Fat Deer Key 11449 . . . . . 346
Fayetteville . . . . . 228, 232
Featherbed Bank 11465 . . . . . 393
Federal Communications Commission . 40
Federal Communications Commission Offices . . . . . 408
Federal Requirements for Recreational Boats . . . . . 404
Federal Water Pollution Control Act (FWPCA) . . . . . 23
Fenwick Cut 11517 . . . . . 259
Fenwick Cut 11518 . . . . . 368
Fernandina Beach 11489. . . . . 371
Fernandina Beach 11503. . . . . 287
Ferry Point 12205 . . . . . 204
Fields Cut 11507 . . . . . 369
Fiesta Key 11449 . . . . . 396
Fishermans Channel 11451, 11467, 11468 . . . . . 334, 392
Fish havens . . . . . 8, 37
Fishing Bank 11516. . . . . 261
Fishtrap areas . . . . . 8
Fishtraps . . . . . 37
Five Fathom Creek 11531 . . . . . 243
Flagler Beach 11485 . . . . . 373
Flagler Beach 11486 . . . . . 316
Flagler Memorial Bridge 11472 . . . 386
Flamingo 11433 . . . . . 345
Flatty Creek 12205 . . . . . 203
Fleming Key 11441 . . . . . 350
Florence Creek 11492 . . . . . 306
Florida Bay 11460 . . . . . 343
Florida Bay 11464 . . . . . 394
Florida Current . . . . . 181
Florida Keys 11460 . . . . . 341
Florida Keys National Marine Sanctuary, MPA . . . . . 341
Florida Keys Particularly Sensitive Sea Area (PSSA) . . . . . 342
Florida Passage 11507. . . . . 370
Florida Passage 11511. . . . . 278
Florida Reefs 11460. . . . . 342
Floyd Creek 11489 . . . . . 371
Floyd Creek 11504 . . . . . 287
Flyers . . . . . 172
Folly Creek 11522 . . . . . 258
Folly Island 11522 . . . . . 257
Folly River 11522. . . . . 258
Food and Drug Administration (FDA) . 37
Food and Drug Administration (FDA) Regional Offices. . . . . 407
Fork Point 11554. . . . . 211
Fort Caswell 11537 . . . . . 228
Fort Clinch 11503 . . . . . 287
Fort Clinch State Park Aquatic Preserve, MPA . . . . . 288
Fort Frederica 11507 . . . . . 370
Fort Gates 11495 . . . . . 309
Fort George Inlet 11488 . . . . . 292
Fort George Island 11488 . . . . . 292
Fort George Island 11490 . . . . . 303
Fort George River 11489. . . . . 372
Fort Lauderdale 11467 . . . . . 388
Fort Macon Creek 11547. . . . . 222
Fort Macon State Park 11547 . . . . 222
Fort Matanzas National Monument 11486 . . . . . 316
Fort McAllister 11509 . . . . . 277
Fort Moultrie 11524 . . . . . 244
Fort Pierce 11472 . . . . . 379
Fort Pierce 11475 . . . . . 321
Fort Pierce Inlet 11475 . . . . . 320
Fort Pulaski 11512, 11505 . . . . . 276
Fort Pulaski National Monument 11512, 11505 . . . . . 276
Fort Raleigh National Historic Site 12205 . . . . . 199
Fort Sumter 11524 . . . . . 244
Fort Taylor 11447 . . . . . 350
Four-Way Channel 11467 . . . . . 393
Fowey Rocks Anchorage 11465 . . . 343
Fowey Rocks Light 11465 . . . . . 343
Frankfort Bank 11447 . . . . . 350
Franklin . . . . . 205
Frazier Creek 11428 . . . . . 324
Frederica River 11506 . . . . . 285
Frederica River 11507 . . . . . 370
Fripp Inlet 11517. . . . . 260
Fripp Island 11517 . . . . . 260
Frisco 11555 . . . . . 208
Frontenac 11485 . . . . . 376
Front River 11507 . . . . . 370
Front River 11510 . . . . . 279
Frying Pan Shoals 11536. . . . . 228
Frying Pan Shoals Slue 11536 . . . 228
Fulcher Landing 11542 . . . . . 226

## G

Gaffy Landing 12204, 12205 . . . . 203
Gale Creek 11553. . . . . 362
Gallants Channel 11541 . . . . . 363
Gallants Channel 11545 . . . . . 225
Garbacon Shoal 11541 . . . . . 363
Garbacon Shoal 11552 . . . . . 213
Garrison Bight Channel 11441 . . . 350
Gaskin Banks 11516 . . . . . 261

Gaylord Bay 11554 . . . . . 211
Geiger Key 11446 . . . . . 348
General bearings . . . . . 1
General Endangered and Threatened Marine Species . . . . . 168
Geographic range . . . . . 9
Georgetown 11495 . . . . . 309
Georgetown 11532 . . . . . 239
Georgetown 11534 . . . . . 367
Georgetown Landing 11532 . . . . 242
Georgetown Light 11532. . . . . 239
Gibbs Shoal 11555 . . . . . 208
Gilbert Shoal 11474. . . . . 323
Global Positioning System (GPS) . . . 12
Goodbys Creek 11492 . . . . . 305
Goodwin Creek 12205 . . . . . 204
Goose Creek 11548 . . . . . 210
Goose Creek 11552 . . . . . 214
Goose Creek 11553 . . . . . 362
Goose Creek Island 11548 . . . . . 212
Government Agencies . . . . . 32
Government Cut 11468 . . . . . 333
Government Printing Office . . . . 403
Graham Swamp 11486 . . . . . 316
Grassy Key 11449 . . . . . 396
Grassy Point 11553 . . . . . 362
Grays Reef National Marine Sanctuary 11509 . . . . . 279
Great Bridge 12206 . . . . . 359
Great Dismal Swamp Canal 12206 . . 360
Great Island 11548 . . . . . 209
Great North Breakers 11516 . . . . 261
Great Pee Dee River 11532 . . . . . 242
Great Pocket 11472 . . . . . 385
Great White Heron National Wildlife Refuge, MPA 11442 . . . . 343
Green Cove Springs 11492 . . . . . 306
Greens Creek 11552 . . . . . 213
Grimesland . . . . . 212
Grouper Creek 11464 . . . . . 394
Guana River 11485 . . . . . 372
Guana Tolomato Matanzas National Estuarine Research Reserve, MPA . 372
Guerin Bridge 11526 . . . . . 254
Guerin Creek 11526 . . . . . 254
Gulf Stream, location of . . . . . 182
Gulf Stream System . . . . . 181
Gulf weed . . . . . 181
Gull Rocks 11555. . . . . 208
Gull Shoal 11555 . . . . . 208

## H

Halifax Bank 11428 . . . . . 383
Halifax River 11485 . . . . . 373
Hallandale Boulevard 11467 . . . . 390
Hall Creek 12205 . . . . . 204
Hamlin Creek 11518 . . . . . 367
Hampton River 11508 . . . . . 281
Hancock Creek 11552 . . . . . 214
Harbor entrances. . . . . 172
Harbor Island 11467 . . . . . 392
Harbormasters. . . . . 193
Harbor River 11517. . . . . 260
Harbour Town 11516 . . . . . 264
Harkers Island 11545 . . . . . 217
Harvey Point 12205 . . . . . 204
Hatteras 11555. . . . . 201
Hatteras Inlet 11555 . . . . . 200
Hatteras Inlet Channel 11555. . . . 201
Hatteras Shoals 11555. . . . . 200
Haulover Canal 11485 . . . . . 375
Haw Creek 11487. . . . . 307
Hawk Channel 11460 . . . . . 342
Health and Human Services, Department of . . . . . 37
Hector Wreck 11531 . . . . . 239
Heights. . . . . 2
Helicopter evacuation . . . . . 16
Hell Gate 11507 . . . . . 370
Henry Holland Buckman Lock 11495 308
Hertford 12205 . . . . . 204
Hetzel Shoal 11484 . . . . . 317
Hickory Point 11554 . . . . . 210
Hillsboro Drainage Canal 11428. . . 383
Hillsboro Drainage Canal 11467. . . 387
Hillsboro Inlet 11467 . . . . . 328, 387
Hilton Head 11516 . . . . . 261
Hilton Head Harbor 11507 . . . . . 369
Hilton Head Island 11512 . . . . . 265
Hobart Landing 11472 . . . . . 379
Hobe Sound 11472 . . . . . 385
Hobe Sound National Wildlife Refuge 11472 . . . . . 385
Hobucken 11548 . . . . . 212
Hobucken 11553 . . . . . 362
Hog Island 11555. . . . . 208
Holden Beach 11534 . . . . . 365
Holidays . . . . . 194
Hollywood 11466. . . . . 333
Hollywood 11467. . . . . 390
Hollywood Boulevard 11467 . . . . 390
Homeland Security Advisory System . . 29
Homeland Security, Department of . . 38
Homestead Bay Front Park Marina 11463 . . . . . 394
Horizontal Datum . . . . . 3
Howards Channel 11541 . . . . . 227
Hudson Creek 11510 . . . . . 280
Hunting Island 11517 . . . . . 258
Hurricane Havens . . . . . 185
Hurricane moorings . . . . . 180
Hurricane Warnings and Forecasts . 185
Hypothermia, immersion . . . . . 192

## I

Idalia 11554 . . . . . 210
Immigration and Naturalization Service Offices . . . . . 408
Indialantic 11476. . . . . 320
Indian Creek 11467 . . . . . 391
Indian Harbor Beach 11476 . . . . 320
Indian Island 11554. . . . . 210
Indian Key Channel 11449 . . . 345, 395
Indian Mound Slough 11498 . . . . 310
Indian River 11485 . . . . . 375
Indian River North 11485 . . . . . 375
Indian River Shoal 11474 . . . . . 320
Indian Town 11428 . . . . . 382
Inlet Harbor 11485 . . . . . 375
Inner Diamond Shoal 11555 . . . . 200
Inside Navigation. . . . . 179
Interference with or Damage to Aids to Navigation . . . . . 68
International Code of Signals . . . . 404
International distress signals . . . . . 12
Intracoastal Waterway. . . . . 343, 357
Isle of Hope 11507 . . . . . 370
Isle of Palms 11518 . . . . . 367

## J

Jacksonboro. . . . . 259
Jacksonville 11491 . . . . . 295
Jacksonville 11542 . . . . . 226
Jacksonville Beach 11488 . . . . . 314
Janeiro 11552 . . . . . 214
Jay Bird Shoals (Middle Ground) 11537 229
Jekyll Creek 11489 . . . . . 371
Jekyll Creek 11504 . . . . . 286
Jekyll Creek 11506 . . . . . 286
Jekyll Island 11504 . . . . . 286
Jekyll Sound 11489 . . . . . 371
Jekyll Sound 11504 . . . . . 286
Jenkins Creek 11519 . . . . . 260
Jensen Beach 11472 . . . . . 379
Jeremy Creek 11518 . . . . . 367
Jewfish Creek 11463, 11464 . . . . 394
John F. Kennedy Space Center 11484, 11481 . . . . . 317
John Pennekamp Coral Reef State Park, MPA . . . . . 344
Johnson Creek 11507 . . . . . 370
Johnson Creek 11517 . . . . . 260
Joiner Bank 11516 . . . . . 261
Jointer Creek 11504, 11506 . . . . 286
Jolly River 11503 . . . . . 291
Jones Bay 11548 . . . . . 212
Jones Bay 11553 . . . . . 362
Jones Creek 11532 . . . . . 239
Jones Point 11485 . . . . . 376
Judith Island 11548. . . . . 209
Julienton River 11510 . . . . . 279
Julington Creek 11492 . . . . . 306
Juniper Bay 11548 . . . . . 209
Jupiter 11472 . . . . . 385
Jupiter Inlet 11474 . . . . . 324
Jupiter Sound 11472 . . . . . 385

## K

Kemp Channel 11445 . . . . . 347
Kendrick Creek 12205. . . . . 206
Key Biscayne 11465. . . . . 343

Key Colony Beach 11449 . . . . . 346
Key Largo 11463 . . . . . 344, 394
Key Largo 11464 . . . . . 345
Key Largo Anchorage 11462 . . . . 344
Key Largo Management Area 11642, 11464 . . . . . 344
Key Largo National Marine Sanctuary 344
Key West 11441, 11447 . . . . . 349
Key West 11446, 11441 . . . . . 396
Key West Harbor 11441, 11447 . . . 349
Key West National Wildlife Refuge 11441 . . . . . 351
Kiawah Island 11522 . . . . . 258
Kiawah River 11522. . . . . 258
Kilkenny Creek 11511. . . . . 278
Kill Devil Hills 12204 . . . . . 198
Kings Bay 11465 . . . . . 393
Kings Bay 11503 . . . . . 290
Kingsley Creek 11489 . . . . . 371
Kingsley Plantation . . . . . 372
Kingston Lake . . . . . 242
Kissimmee River 11428 . . . . . 382
Kitty Hawk 12204 . . . . . 203
Kitty Hawk Bay 12204. . . . . 203
Knight Key 11449 . . . . . 346
Knight Key Anchorage 11449. . . . 346
Knight Key Channel 11449. . . . . 396
Knobbs Creek 12206 . . . . . 361
Knotts Island 12205 . . . . . 202
Kreamer Island 11428. . . . . 383
Kure Beach 11537 . . . . . 228, 229

## L

LaBelle 11428 . . . . . 384
Labrador Current. . . . . 182
Lake Beresford 11498 . . . . . 309
Lake Boca Raton 11467 . . . . . 387
Lake Dexter 11498 . . . . . 309
Lake Drummond 12206 . . . . . 360
Lake George 11495 . . . . . 309
Lake Griffin 11495 . . . . . 308
Lake Harbor 11428 . . . . . 383
Lake Harney 11498 . . . . . 310
Lake Hicpochee 11428 . . . . . 384
Lake Jessup 11498 . . . . . 310
Lake Monroe 11498. . . . . 310
Lake Moultrie . . . . . 253
Lake Okeechobee 11428 . . . . . 382
Lake Placid 11467 . . . . . 387
Lake Rudee 12205 . . . . . 198
Lake Santa Barbara 11467 . . . . . 388
Lake Surprise 11463, 11464 . . . . 394
Lake Sylvia 11467 . . . . . 389
Lake Wesley 12205 . . . . . 198
Lake Woodruff 11498 . . . . . 309
Lake Worth 11467 . . . . . 386
Lake Worth 11472 . . . . . 385
Lake Worth 12204 . . . . . 207
Lake Worth Inlet 11466 . . . . . 324
Lake Wyman 11467. . . . . 387
Lanceford Creek 11503 . . . . . 291
Lanier Island 11506. . . . . 285
Lantana 11467. . . . . 386
Largo Sound 11464, 11462, 11463 . . 345
Last End Point 11516 . . . . . 264
Lauderdale-by-the-Sea 11467 . . . . 388
Lazaretto Creek 11512, 11505 . . . 276
Leary Canal 11548 . . . . . 212
Leechville 11548 . . . . . 209
Lees Landing 11552. . . . . 214
Legare Anchorage 11465. . . . . 344
Lenoxville Point 11545 . . . . . 215
Light and sound signal characteristics . 2
Lighthouse Bay 11545. . . . . 202
Lighthouse Creek 11510 . . . . . 280
Lighthouse Creek 11522 . . . . . 258
Lighthouse Inlet 11522, 11521 . . . 257
Lighthouse Island 11531. . . . . 243
Light Lists . . . . . 11
Light Lists (United States and Possessions) . . . . . 403
Lights . . . . . 9
Light-sector bearings . . . . . 1
Lignumvitae Channel 11449 . . . . 395
Lignumvitae Key 11449 . . . . . 345
List of Lights (Foreign Countries) . . 403
Little Alligator River 12205. . . . . 206
Little Card Sound 11463. . . . . 394
Little Cumberland Island 11489. . . 371
Little Cumberland Island 11502. . . 287
Little Egg Island 11507 . . . . . 370
Little Lake Worth 11472 . . . . . 386
Little Mud River 11507 . . . . . 370
Little Mud River 11508 . . . . . 281
Little Mud River 11510 . . . . . 280
Little Ogeechee River 11512 . . . . 277
Little (Old) Topsail Inlet 11541 . . . 227
Little Port Brook 11550 . . . . . 216
Little River 11467 . . . . . 392
Little River 11506 . . . . . 285
Little River 11534 . . . . . 366
Little River 12205 . . . . . 203
Little River Inlet 11535 . . . . . 238
Little Satilla River 11489. . . . . 371
Little Satilla River 11504, 11506. . . 286
Little St. Simons Island 11502 . . . 281
Little Talbot Island 11488 . . . . . 292
Little Torch Key 11445 . . . . . 347
Little Tybee Island 11512 . . . . . 276
Local magnetic disturbances . . . . . 8
Local Notices to Mariners . . . . . 9
Lock, Franklin 11428 . . . . . 384
Lockwoods Folly Inlet 11536 . . . . 238
Lockwoods Folly River 11534 . . . . 365
Lockwoods Folly River 11536 . . . . 238
Lone Oak Channel 12204, 12205 . . 203
Long Bay 11548 . . . . . 215
Long Key 11449 . . . . . 396
Long Key Anchorage 11449 . . . . 346
Long Shoal 12204 . . . . . 207
Long Shoal River 12204 . . . . . 207
Looe Key 11442 . . . . . 347
Looe Key Management Area (Looe Key National Marine Sanctuary) 11442 . . . . . 347
Lookout Bight 11545 . . . . . 202
Lookout Breakers 11544 . . . . . 202
Loop Current . . . . . 181
LORAN-C . . . . . 12
Lower Matecumbe Key 11449. . . . 395
Loxahatchee River 11472 . . . . . 385
Lucy Point Creek 11519 . . . . . 260
Luminous range . . . . . 9

## M

Mackay Creek 11516 . . . . . 264
Mackay Island National Wildlife Refuge, MPA . . . . . 202
Mackay River 11506. . . . . 285
Mackay River 11507. . . . . 370
Mackey Point 11512 . . . . . 265
Mackeys 12205. . . . . 206
Magnolia Point 11492 . . . . . 306
Main Creek 11534 . . . . . 238
Main Ship Channel 11441 . . . . . 349
Manatee Pocket 11428. . . . . 323
Manatees . . . . . 180
Maneuvering for a tropical cyclone . 187
Mangrove . . . . . 179
Man of War Harbor 11441 . . . . . 350
Manteo 12205 . . . . . 199
Marathon 11449 . . . . . 346, 396
Margot Fish Shoal 11462 . . . . . 344
Marietta River 11467 . . . . . 389
Marine Broadcast Notices to Mariners . 9
Marineland 11485 . . . . . 373
Marineland 11486 . . . . . 316
Marine Pollution . . . . . 23
Marine Product Dissemination Information. . . . . 36, 404
Marine Protected Area (MPA) . . . . . 32
Marine Radiofacsimile Broadcast Schedules, Worldwide . . . . . 19
Marine Weather Forecasts . . . . 34, 403
Marine Weather Services Charts. . 21, 402
Marion River 11467. . . . . 389
Maritime Security (MARSEC) Levels, USCG . . . . . 29
Marquesas Keys 11439 . . . . . 174
Marshallberg 11545. . . . . 216
Martins Industry 11516 . . . . . 261
Marvin D. Adams (Key Largo) Waterway 11464 . . . . . 345
Masonboro Inlet 11539 . . . . . 227
Masonboro Sound 11541. . . . . 365
Mason Inlet 11539 . . . . . 227
Matanzas Inlet 11485 . . . . . 316
Matanzas River 11485 . . . . . 373
Matecumbe Harbor 11449 . . . . . 395
Matheson Hammock Beach 11467 . . 393
Maule Lake 11467 . . . . . 390
Maw Point Shoal 11553 . . . . . 362
Mayan Lake 11467 . . . . . 389

May Hall Creek 11510 . . . . . 280
Mayport 11490. . . . . 303
Mayport Basin 11490 . . . . . 303
May River 11516 . . . . . 264
McClellanville 11518 . . . . . 367
McCoy Creek 11491. . . . . 300
McQueen Inlet 11511 . . . . . 278
McQueens Island 11512 . . . . . 276
Measured Courses . . . . . 408
Medical advice and/or evacuation . . . 17
Medway River 11507 . . . . . 370
Medway River 11511 . . . . . 278
Meherrin River 12205 . . . . . 205
Meigs Key 11463 . . . . . 344
Melbourne 11472. . . . . 378
Meloy Channel 11467 . . . . . 334, 391
Mercator projection. . . . . 3
Mercedes River 11467 . . . . . 389
Meridian 11510 . . . . . 280
Meridian Landing 11510 . . . . . 280
Merritt Island 11476, 11484, 11481 . 317
Merritt Island 11485 . . . . . 375
Merritt Island National Wildlife Refuge 11485 . . . . . 375
Miami 11467 . . . . . 392
Miami 11468 . . . . . 333
Miami Beach 11467. . . . . 391
Miami Beach 11468. . . . . 333
Miami Beach Channel 11467 . . . . 391
Miami Canal 11467 . . . . . 337
Miami Drainage Canal 11428 . . . . 383
Miami Harbor 11468 . . . . . 333
Miami River 11467 . . . . . 337
Miami South Channel 11465 . . . . 343
Middle Bay 11548 . . . . . 212
Middleburg 11492 . . . . . 306
Middle River 11467 . . . . . 388
Middle Sound 11541 . . . . . 364
Middletown 11548 . . . . . 208
Middletown Anchorage 11555. . . . 208
Middletown Creek 11548. . . . . 208
Mile Hammock Bay 11541 . . . . . 364
Milledgeville. . . . . 281
Mill Landing Creek (Mill Creek) 12205 199
Milltail Creek 11553 . . . . . 206
Mineclearing-Caution . . . . . 25
Mingo Creek. . . . . 242
Minnesott Beach 11552 . . . . . 214
Molasses Reef 11462, 11464 . . . . 344
Molasses Reef Channel 11462, 11464 . 344
Money Island Beach 11541 . . . . . 363
MONITOR . . . . . 200
Montgomery 11512 . . . . . 277
Moon Creek 11516 . . . . . 260
Moore Creek 11475 . . . . . 322
Moore Haven 11428. . . . . 383
Moores Landing 11518 . . . . . 367
Morehead City 11541 . . . . . 363
Morehead City 11547 . . . . . 222
Morehead City Harbor 11547 . . . . 222
Morgan River 11517, 11519 . . . . 260
Morris Creek 11552. . . . . 213
Morris Island 11522, 11521. . . . . 257
Moser Channel 11449 . . . . . 347, 396
Moss Bluff Lock and Dam 11495. . . 308
Motts Channel 11541 . . . . . 227
Mount of Surruque 11484 . . . . . 317
Mount Pleasant 11518. . . . . 367
Mount Pleasant 11524. . . . . 252
Mount Pleasant Channel 11524 . . . 252
Mouse Harbor 11548 . . . . . 212
Muddy Creek 11554. . . . . 210
Mud River 11510 . . . . . 279
Munden 12206. . . . . 359
Murfreesboro . . . . . 205
Murphy Creek 11487 . . . . . 307
Murrells Inlet 11534 . . . . . 238
Myrtle Beach 11535. . . . . 238
Myrtle Grove Sound 11541 . . . . . 365

## N

Nags Head 12204. . . . . 199
Narrow channels . . . . . 27
Nassau River 11488. . . . . 291
Nassau Sound 11488 . . . . . 291
Nassau Sound 11489 . . . . . 372
Nassauville 11488 . . . . . 291
National Data Buoy Center Meteorological Buoys . . . . . 34
National Environmental Satellite, Data, and Information Service (NESDIS) . . . . . 36
National Geospatial-Intelligence Agency (NGA) . . . . . 36
National Geospatial-Intelligence Agency Procurement Information. . 403
National Institute of Standards and Technology . . . . . 22
National Key Deer Refuge 11442 . . 343
National Ocean Service (NOS) . . . . 33
National Weather Service Offices . . . 34
National Weather Service Port Meteorological Officers (PMOs) . . . . 36
Nautical Almanac. . . . . 403
Naval Observatory . . . . . 37
Navassa 11537 . . . . . 232
Navigation Rules . . . . . 404
Navigation Safety Regulations . . . 104
NAVTEX . . . . . 21
NAVTEX Transmitting Stations . . . 406
Nebraska 11548 . . . . . 208
Nebraska Canal 11548. . . . . 208
Nettles Island 11472 . . . . . 379
Neuse River 11548, 11552 . . . . . 213
New Arch Creek 11467 . . . . . 391
Newbegun Creek 12206 . . . . . 361
New Bern 11552 . . . . . 214
New Chehaw River 11519 . . . . . 259
New Drum Inlet 11545 . . . . . 202
Newfound Harbor 11476, 11485. . . 377
Newfound Harbor Channel 11445 . . 347
Newfound Harbor Keys Anchorage 11445 . . . . . 347
New Inlet 11539, 11534 . . . . . 228
Newport River 11541 . . . . . 363
New River 11467 . . . . . 388
New River 11507 . . . . . 369
New River 11541 . . . . . 364
New River 11542 . . . . . 226
New River Inlet 11541. . . . . 364
New River Inlet 11542. . . . . 226
New Savannah Bluff Lock and Dam 11515 . . . . . 269
New Smyrna Beach 11485 . . . . . 375
New Topsail Inlet 11539 . . . . . 227
New Topsail Inlet 11541 . . . . . 364
Niles Channel 11445 . . . . . 347
Nine Foot Shoal Channel 11550. . . 201
Ninefoot Shoal Light 11446 . . . . 348
Ninemile Point 11487 . . . . . 307
NIST Time and Frequency Dissemination Services, Special Publication 432 . . . . . 22
Nixonton 12205 . . . . . 203
NOAA Weather Radio . . . . . 21, 34
No-Discharge Zones . . . . . 24
Nominal range. . . . . 9
Norfolk 12206 . . . . . 358
Normandy Isle 11467 . . . . . 391
Norris Cut 11465. . . . . 343
North Atlantic Drift. . . . . 182
North Atlantic right whales. . . . . 174
North Atlantic Right Whales 197, 221, 237, 257, 275, 289, 295, 318
North Bay 12207 . . . . . 202
North Canal 11463 . . . . . 394
North Carolina Cut 12206 . . . . . 359
North Carolina-South Carolina State Line . . . . . 366
North Channel 11511 . . . . . 277
North Charleston 11524 . . . . . 253
North Creek 11518 . . . . . 368
North Creek 11554 . . . . . 210
Northeast Cape Fear River 11537 . . 233
Northeast Point 11531 . . . . . 243
North Edisto River 11522 . . . . . 258
North Fork 11474 . . . . . 324
North Fork Miami River 11467 . . . 337
North Inlet 11532 . . . . . 239
North Lake 11467 . . . . . 390
North Lake Shoal 11428 . . . . . 382
North Landing 12206 . . . . . 359
North Landing River 12206. . . . . 359
North Landing River 12207. . . . . 203
North Newport River 11507 . . . . 370
North Newport River 11511 . . . . 278
North New River Drainage Canal 11428 383
North Prong 11548 . . . . . 210
North River 11503 . . . . . 291
North River 11507 . . . . . 370
North River 11510 . . . . . 280
North River 12204 . . . . . 203
North River 12206 . . . . . 360
North Santee River 11531 . . . . . 242
North Santee River 11534 . . . . . 367
Northwest Channel 11441 . . . . . 350

Northwest Channel 11448 . . . . . 397
Northwest Creek 11552 . . . . . 214
Notices to Mariners . . . . . 9
Nottoway River . . . . . 205
Nowell Creek 11524. . . . . 254

## O

Oak Island Light 11537 . . . . . 228
Oak Landing 11489 . . . . . 372
Oakland Park 11467 . . . . . 388
Oaks Creek 11534 . . . . . 238
Oatland Island 11512 . . . . . 265
Observation Island 11428 . . . . . 382
Observation Shoal 11428 . . . . . 382
Obstructions . . . . . 3
Ocean Dumping . . . . . 25
Ocean Reef Harbor 11463 . . . . . 344
Ocmulgee River . . . . . 281
Oconee River . . . . . 281
Ocracoke 11550 . . . . . 201
Ocracoke Inlet 11550 . . . . . 201
Ocracoke Inlet Crab Spawning Sanctuary, MPA . . . . . 201
Ocracoke Light 11550 . . . . . 201
Odingsell River 11512 . . . . . 277
Ogeechee River 11507. . . . . 370
Ogeechee River 11511, 11509. . . . 277
Oglethorpe Barracks 11507. . . . . 370
Ohio Key 11445, 11449 . . . . . 347
Ohio Shoal 11484 . . . . . 317
Oil Pollution . . . . . 24
Okeechobee 11428 . . . . . 382
Okeechobee Waterway 11428 . . . . 380
Oklawaha River 11495. . . . . 309
Old Chehaw River . . . . . 259
Old House Channel 12205 . . . . . 199
Old House Creek 11517 . . . . . 260
Old Rhodes Key 11463. . . . . 394
Old Teakettle Creek 11507 . . . . . 370
Old Teakettle Creek 11510 . . . . . 280
Oleta River 11467 . . . . . 390
Olga 11428 . . . . . 384
Oliver Reef 11555 . . . . . 208
Orange Park 11492 . . . . . 305
Orange River 11428. . . . . 384
Oregon Inlet 12205 . . . . . 199
Oriental 11541. . . . . 363
Oriental 11552. . . . . 213
Ormond Beach 11485 . . . . . 373
Ortega 11492 . . . . . 305
Ortega River 11492 . . . . . 304
Ortona Lock 11428 . . . . . 384
Ossabaw Island 11511 . . . . . 277
Ossabaw Sound 11511. . . . . 277
Otter Islands 11517 . . . . . 259
Outer Banks. . . . . 171
Outer Diamond Shoal 11555 . . . . 200
Owl Creek 11428 . . . . . 384
Oyster Creek 11545 . . . . . 216

## P

Pablo Creek 11489 . . . . . 372
Pacific Reef 11462 . . . . . 344
Pacific Reef Light 11451 . . . . . 344
Packaged Marine Pollutants . . . . . 25
Pages Creek 11541 . . . . . 364
Pahokee 11428. . . . . 383
Pains Bay 12204 . . . . . 207
Palatka 11487 . . . . . 307
Palm Beach 11466 . . . . . 325
Palm City 11428 . . . . . 381
Palmo Cove 11492 . . . . . 306
Palm Valley Landing 11489. . . . . 372
Palo Alto Key 11463. . . . . 394
Pamlico 11548 . . . . . 213
Pamlico Point Light PP 11548 . . . 212
Pamlico River 11548, 11554 . . . . 209
Pamlico Sound 12204, 11548, 11555 . 207
Pantego 11548 . . . . . 210
Pantego Creek 11548, 11554 . . . . 210
Pantego Creek 11553 . . . . . 362
Parker Creek 12206 . . . . . 360
Parris Island 11516 . . . . . 262
Parrot Creek 11519 . . . . . 260
Pasquotank River 12206 . . . . 203, 360
Pea Island 12205 . . . . . 199
Pearl Bank 11441. . . . . 350
Peck Lake 11472 . . . . . 385
Peletier Creek 11541 . . . . . 363
Pelican Bay 11428 . . . . . 383
Pelican Island National Wildlife Refuge 11472 . . . . . 378
Pembroke Creek 12205 . . . . . 204
Perquimans River 12205. . . . . 204
Peter Mashoes Creek 12204 . . . . 207
Peterson Key Bank 11449 . . . . . 395
Pierce Shoal 11474 . . . . . 323
Pigeon Key 11449 . . . . . 396
Pilotage, Beaufort/Port Royal . . . . 262
Pilotage, Brunswick. . . . . 283
Pilotage, Charleston . . . . . 250
Pilotage, Fort Pierce . . . . . 321
Pilotage, general . . . . . 193
Pilotage, Georgetown . . . . . 240
Pilotage, Jacksonville . . . . . 300
Pilotage, Key West . . . . . 352
Pilotage, Miami . . . . . 335
Pilotage, Morehead City . . . . . 224
Pilotage, Port Canaveral . . . . . 318
Pilotage, Port Everglades . . . . . 330
Pilotage, Port of Palm Beach . . . . 326
Pilotage, Savannah . . . . . 266
Pilotage, St. Marys, Fernandina Beach, and Kings Bay . . . . . 289
Pilotage, Wilmington . . . . . 230
Pinckney Island National Wildlife Refuge, MPA . . . . . 265
Pine Harbor 11510 . . . . . 279, 370
Pine Island 11485 . . . . . 376
Piney Point 11492 . . . . . 305
Pingleton Shoal 12204 . . . . . 207
Pinkney Island National Wildlife Refuge, MPA . . . . . 265
Pipelaying barges. . . . . 173
Piper Hill 12204 . . . . . 203
Pirates Cove 11492 . . . . . 305
Plantation Creek 11489 . . . . . 371
Plantation Creek 11506 . . . . . 285
Plantation Key 11464 . . . . . 395
Platt Shoals 12204 . . . . . 199
Plymouth 12205 . . . . . 205
Pocosins . . . . . 171
Pocotaligo River 11519 . . . . . 263
Pollocksville 11552 . . . . . 215
Polly Creek 11487 . . . . . 307
Pompano Beach 11467 . . . . . 387
Pompion Hill Chapel 11527 . . . . 253
Ponce de Leon Cut 11485 . . . . . 375
Ponce de Leon Inlet 11485 . . . . . 316
Ponce Inlet 11485 . . . . . 375
Ponte Verda Beach 11488 . . . . . 314
Poplar Branch 12204, 12205 . . . . 203
Port Canaveral 11478, 11481 . . . . 317
Port Everglades 11467. . . . . 389
Port Everglades 11470. . . . . 328
Port Laudania 11467 . . . . . 389
Port Laudania 11470 . . . . . 332
Port Mayaca 11428 . . . . . 382
Port Mayaca Lock 11428 . . . . . 382
Port of Miami (Dodge Island) 11467 . 392
Port of Palm Beach 11466 . . . . . 325
Port Orange 11485 . . . . . 374
Port Royal 11516 . . . . . 263
Port Royal 11518, 11507 . . . . . 369
Port Royal Sound 11516 . . . . . 260
Port Salerno 11428 . . . . . 323
Port Series of the United States . . . 404
Port Sewall 11428 . . . . . 323
Portsmouth 11550 . . . . . 201
PORTS® (Physical Oceanographic Real-Time System). . . . . 33
Poston . . . . . 242
Power Squadron Spit 11545 . . . . 202
Precipitation . . . . . 191
Precise bearings . . . . . 1
Preparations for being towed by Coast Guard . . . . . 17
Price Creek 11518 . . . . . 367
Price Creek 11521 . . . . . 243
Price Inlet 11521 . . . . . 243
Print On Demand Nautical Charts . . . 6
Pritchards Inlet 11516. . . . . 260
Prominent features . . . . . 333
Public Health Service . . . . . 37
Public Health Service Quarantine Stations . . . . . 407
Pumpkin Hammock 11510 . . . . . 280
Pumpkin Key 11463 . . . . . 394
Pungo Creek 11548, 11554 . . . . . 210
Pungo Ferry 12206 . . . . . 359
Pungo River 11548 . . . . . 209
Pungo River 11553 . . . . . 362

## Q


Quarantine . . . . . 37
Quarantine, animal and plant . . . 32, 407
Quarantine Stations . . . . . 407


## R


Raccoon Key 11531 . . . . . 243
Race Channel 11449 . . . . . 395
Racons . . . . . 19
Radar beacons (Racons) . . . . . 19
Radar Profile . . . . . 14
Radar, use of. . . . . 27
Radio aids to navigation . . . . . 3
Radio distress procedures . . . . . 12
Radio Facsimile Weather Information</CP_B> . . . . . 402
Radio Island 11547 . . . . . 225
RADIOMEDICAL . . . . . 17, 408
Radio Navigational Aids, Pub. 117 . . 403
Radio: Navigation Warnings, Information and Weather . . . . . 19
Radio shore stations providing medical advice . . . . . 408
Radiotelephone channels . . . . . 27
Radio Weather Broadcasts . . . . . 406
Ramshorn Creek 11507 . . . . . 369
Ranges . . . . . 3
Rantowles Creek 11521 . . . . . 368
Rattlesnake Shoal 11523. . . . . 249
Red Bay Creek 11492 . . . . . 306
Red Bay Point 11492 . . . . . 306
Redstone Point 12204 . . . . . 207
Reed Point 12205. . . . . 204
Regulated Navigation Areas and Limited Access Areas . . . . . 117
Regulated Waters. . . . . 29
Repairs . . . . . 193
Reported information . . . . . 3
Reports from ships . . . . . 22
Revised Reprint Nautical Charts. . . . 7
Ribbon Creek 11516 . . . . . 263
Rice Creek 11487. . . . . 307
Richardson Creek 11512 . . . . . 277
Rich Inlet 11539 . . . . . 227
Rickenbacker Causeway 11467 . . . 392
Ridgeville 11510 . . . . . 280
Right Whales, North Atlantic . . . . 174
Rio 11428. . . . . 324
Riomar 11474 . . . . . 320
Riviera Beach 11466 . . . . . 325
Riviera Beach 11472 . . . . . 386
Roanoke Island 12205 . . . . . 199
Roanoke Rapids . . . . . 205
Roanoke River 12205 . . . . . 205
Roanoke Sound Channel 12205 . . . 199
Rock Harbor 11464 . . . . . 345
Rockhouse Creek 11485 . . . . . 316
Rockville 11522 . . . . . 258
Rockyhock Creek 12205 . . . . . 205
Rocky Reef 11428 . . . . . 382
Rodanthe 12204 . . . . . 207
Rodman Dam 11495 . . . . . 308
Rollinson Channel 11555 . . . 201, 208
Romerly Marsh Creek 11512 . . . . 277
Rose Bay 11548 . . . . . 209
Roseland 11472 . . . . . 378
Royal Palm (Royal Park) 11472 . . . 386
Royal Shoal 11548 . . . . . 215
Rudee Inlet 12205 . . . . . 198
Runyon Creek 11554 . . . . . 211


## S


Saddlebunch Harbor 11445 . . . . 348
Safe Harbor 11446, 11441 . . . . . 348
Sailing Directions (Foreign Countries) 403
Saint Sebastian River 11472 . . . . 378
Sales agents . . . . . 33
Sales Information . . . . . 401
Salmon Creek 12205 . . . . . 204
Salt Run 11485 . . . . . 315
Sampit . . . . . 241
Sampit Landing . . . . . 242
Sampit River 11532. . . . . 241
Sampit River 11534. . . . . 367
Sampson Point 12204, 12205 . . . . 203
Sandbridge Beach 12207. . . . . 198
Sand Key Light 11441. . . . . 349
Sands Key 11465 . . . . . 393
Sandy Point 11531 . . . . . 243
Sandy Point 12205 . . . . . 204
Sandy Point Beach 11531 . . . . . 243
Sanford 11498 . . . . . 310
San Mateo 11487 . . . . . 307
San Sebastian River 11488 . . . . . 315
Santee River 11531 . . . . . 242
Sapelo Island 11510. . . . . 280
Sapelo River 11507 . . . . . 370
Sapelo River 11510 . . . . . 279
Sapelo Sound 11507 . . . . . 370
Sapelo Sound 11510 . . . . . 278
Saratoga 11495 . . . . . 308
SARSAT . . . . . 19
Satilla River 11489 . . . . . 371
Satilla River 11504 . . . . . 286
Satilla River Marsh Island Natural Area, MPA . . . . . 286
Saturn Barge Channel 11484 . . . . 377
Savage Creek 11516. . . . . 264
Savannah 11507 . . . . . 369
Savannah 11512 . . . . . 264
Savannah River 11507. . . . . 369
Savannah River 11512, 11505, 11514, 11515 . . . . . 264
Savannas . . . . . 171
Sawpit Creek 11488. . . . . 291
Sawpit Creek 11489. . . . . 372
Schooner Channel 11519 . . . . . 259
Scout Key 11445 . . . . . 347
Scuppernong River 12205 . . . . . 206
Seabrook Landing 11507. . . . . 369
Sea Island 11502 . . . . . 281
Sealevel 11545. . . . . 216
Search and Rescue . . . . . 12
Searchlights. . . . . 27
Sea Turtle Sanctuary, MPA . . . . . 226
Sebastian 11472 . . . . . 379
Sebastian Inlet 11472 . . . . . 320
Secessionville 11522 . . . . . 258
Seiche . . . . . 23
Seismic sea waves . . . . . 22
Seminole River 11467. . . . . 389
Sewall Point 11428 . . . . . 324
Sewee Bay 11518. . . . . 367
Shallotte 11536 . . . . . 238
Shallotte Inlet 11534 . . . . . 365
Shallotte Inlet 11536 . . . . . 238
Shallotte River 11534 . . . . . 365
Shallotte River 11536 . . . . . 238
Shallowbag Bay 12205. . . . . 199
Shellbluff Creek 11507 . . . . . 370
Shellbluff Creek 11510 . . . . 280, 370
Shell Key Bank 11464 . . . . . 395
Shell Key Channel 11449 . . . . . 395
Shellman Bluff 11510 . . . . . 279
Shellman Creek 11510 . . . . . 279
Shell Point 11545 . . . . . 217
Shem Creek 11524 . . . . . 252
Shipps Bay 12207 . . . . . 202
Shipyard Creek 11524 . . . . . 253
Shutes Folly Island 11524 . . . . . 253
Silver Lake 11550 . . . . . 201
Silver Springs Run 11495 . . . . . 308
Singer Island 11472. . . . . 386
Sister Creek 11449 . . . . . 346
Sisters Creek 11489. . . . . 372
Sixmile Creek 11492 . . . . . 306
Skidaway Narrows 11507 . . . . . 370
Skidaway River 11507 . . . . . 370
Skull Creek 11507 . . . . . 369
Skull Creek 11516 . . . . . 264
Skull Inlet 11517. . . . . 260
Slade Creek 11548 . . . . . 210
Sleepy Creek 11545 . . . . . 217
Slocum Creek 11552 . . . . . 214
Small-craft facilities . . . . . 194
Smith Creek 11537 . . . . . 233
Smith Creek11552 . . . . . 213
Smith Island 11536 . . . . . 228
Smith Point 11492 . . . . . 306
Smith Shoal 11439 . . . . . 350
Snake Creek 11464 . . . . . 395
Snapper Creek Canal 11465 . . . . 393
Snows Cut 11534. . . . . 365
Snows Cut 11537. . . . . 232
Soap Creek 11503 . . . . . 291
Socastee 11534 . . . . . 366
Sombrero Key Light 11449. . . . . 346
Sound signals . . . . . 11
Source diagrams . . . . . 4
South Altamaha River 11508 . . . . 281
South Amelia River 11488 . . . . . 291

South Amelia River 11489 . . . . . 371
South Bay 11428 . . . . . 383
South Brunswick River 11506 . . . 285
South Channel 11511 . . . . . 277
South Channel 11512 . . . . . 276
South Channel 11516 . . . . . 261
South Creek 11554 . . . . . 210
Southeast Channel 11516 . . . . . 261
Southeast Shoal 11484, 11481 . . . 317
South Edisto River 11517 . . . . . 259
South Edisto River 11518 . . . . . 368
South Fork Miami River 11467 . . . 337
South Jupiter Narrows 11472 . . . . 385
South Lake 12204 . . . . . 206
South Mills 12206 . . . . . 360
South Newport River 11507 . . . . 370
South Newport River 11510 . . . . 279
South New River Canal 11467 . . . 389
South Ponte Vedra Beach 11489. . . 372
Southport 11534 . . . . . 365
Southport 11537 . . . . . 232
South River 11510 . . . . . 280
South River 11544, 11548 . . . . . 213
South Santee River 11531 . . . . . 242
South Santee River 11534 . . . . . 367
South Sound Creek 11464 . . . . . 345
Southwest Channel 11441 . . . . . 350
Space Environment Center (SEC) . . . 36
Special Notice to Mariners . . . . . 403
Special signals for surveying vessels . . 27
Speed . . . . . 179
Spoil areas . . . . . 8
Spooner Creek 11541 . . . . . 363
Spring Garden Creek 11498 . . . . 309
Spring Garden Lake 11498 . . . . . 309
Spruce Creek 11485 . . . . . 375
Standard time . . . . . 194
St. Andrew Sound 11489. . . . . 371
St. Andrew Sound 11504. . . . . 286
Station Creek 11516 . . . . . 262
St. Augustine 11488 . . . . . 314
St. Augustine Creek 11507 . . . . . 369
St. Augustine Inlet 11488, 11485 . . 314
St. Catherines Island 11511, 11510 . 278
St. Catherines Sound 11507 . . . . 370
St. Catherines Sound 11511 . . . . 278
Steamboat Channel 11464 . . . . . 395
Steamboat Creek 11522 . . . . . 258
Steamboat Cut 11507 . . . . . 370
Stella . . . . . 226
St. Helena Sound 11517 . . . . . 258
Still Bluff . . . . . 233
St. Johns Light 11490 . . . . . 295
St. Johns Park 11492 . . . . . 305
St. Johns Point 11490 . . . . . 303
St. Johns River 11489 . . . . . 372
St. Johns River 11490, 11491, 11492, 11487, 11495, 11498 . . . . 295
St. Johns River Navigational Guidelines 296
St. Lucie Canal 11428 . . . . . 381
St. Lucie Inlet 11472 . . . . . 380
St. Lucie Inlet 11474 . . . . . 323
St. Lucie Lock 11428 . . . . . 382
St. Lucie River 11428 . . . . . 323
St. Lucie Shoal 11474 . . . . . 323
St. Marys 11503 . . . . . 290
St. Marys Entrance 11503 . . . . . 287
St. Marys River 11503 . . . . . 290
St. Michaels Breakers 11516 . . . . 261
Stock Island Channel 11446, 11441 . 348
Stokes Landing 11495. . . . . 308
Stonewall 11552 . . . . . 212
Stono Inlet 11522 . . . . . 258
Stono River 11518 . . . . . 368
Stono River 11522 . . . . . 258
Storm surge. . . . . 22
Story River 11517 . . . . . 260
Straits of Florida 11460 . . . . . 341
Straits, The 11545 . . . . . 217
Stranahan River 11467 . . . . . 389
St. Simons 11506. . . . . 285
St. Simons Island 11502 . . . . . 281
St. Simons Island 11506 . . . . . 285
St. Simons Light 11506 . . . . . 282
St. Simons Sound 11489. . . . . 371
St. Simons Sound 11506, 11502. . . 281
Stuart 11428 . . . . . 324
Stumps and sunken logs . . . . . 180
Stump Sound 11541 . . . . . 364
Stumpy Point Bay 12204. . . . . 207
Stumpy Reach 12205 . . . . . 204
Submarine cables and submerged pipelines . . . . . 7
Submarine Emergency Identification Signals and Hazard to Submarines . . . . . 26
Submerged pipelines . . . . . 7
Sugarloaf Key 11445 . . . . . 348
Sullivans Island 11518 . . . . . 367
Sullivans Island 11524 . . . . . 244
Sunbury 11511 . . . . . 278
Sunset Harbor Channel 11467 . . . 392
Supplies . . . . . 193
Supply 11536 . . . . . 238
Surface ship procedures for assisting aircraft in distress . . . . . 15
Surface ship procedures for assisting distressed surface vessels . . . 14
Surfside 11467. . . . . 391
Swan Creek 11553 . . . . . 206
Swan Point 11541 . . . . . 364
Swanquarter 11548 . . . . . 209
Swanquarter Bay 11548 . . . . . 209
Swanquarter Narrows 11548 . . . . 209
Swanquarter National Wildlife Refuge, MPA . . . . . 207
Swansboro 11541. . . . . 364
Swansboro 11543. . . . . 226
Sweetwater . . . . . 337
Swimming Pen Creek 11492 . . . . 306
Sykes Creek 11476, 11485 . . . . . 377
Sykes Creek 12206 . . . . . 359

T

Talbot Island 11488 . . . . . 291
Tank Island 11447 . . . . . 349
Tarpon Basin 11464. . . . . 394
Tar River 11548, 11554 . . . . . 209
Tavernier 11464 . . . . . 345, 395
Tavernier Creek 11464. . . . . 395
Tavernier Key Anchorage 11464 . . . 345
Taylor Creek 11428 . . . . . 382
Taylor Creek 11545 . . . . . 215
Teatable Key Channel 11449 . . . . 395
Temperature. . . . . 190
Tennessee Reef 11449 . . . . . 346
Territorial Sea . . . . . 31
Terry Creek 11506 . . . . . 285
The Blowout 11548 . . . . . 209
The Bull 11484 . . . . . 317
The Elbow 11462. . . . . 344
The Haulover 11548 . . . . . 209
The Straits 11545 . . . . . 217
The Tee 11527 . . . . . 253
Thomas Shoal 11476 . . . . . 320
Thorofare 11550 . . . . . 216
Thorofare Bay 11550 . . . . . 216
Thunderbolt 11507 . . . . . 370
Tick Island Creek 11498 . . . . . 309
Tidal Current Tables . . . . . 34
Tides. . . . . 181
Tide Tables . . . . . 33
Time . . . . . 3
Time Signals . . . . . 22
Timmons River 11511 . . . . . 278
Titusville 11485 . . . . . 375
Tolomato River 11489 . . . . . 372
Topsail Sound 11539 . . . . . 227
Topsail Sound 11541 . . . . . 364
Torry Island 11428 . . . . . 383
Towage . . . . . 193
Town Creek 11524 . . . . . 253
Town Creek 11532 . . . . . 239
Town Creek 11545 . . . . . 225
Traffic Separation Scheme (Approaches to Cape Fear River) . . . . . 229
Traffic Separation Schemes (Traffic Lanes) . . . . . 29
Treasure Island 11467 . . . . . 391
Trenchards Inlet 11516 . . . . . 260
Trent River 11552 . . . . . 215
Triumph Reef 11465 . . . . . 344
Tropical cyclone climatology . . . . 184
Tropical Cyclones. . . . . 184
Tropical cyclones at sea . . . . . 187
Tropical waters. . . . . 172
Troup Creek 11507 . . . . . 371
Trout Creek 11428 . . . . . 384
Trout Creek 11492 . . . . . 306
Trout River 11491 . . . . . 304
Tsunamis . . . . . 22
Tubbs Inlet 11536 . . . . . 238
Tulifiny River 11519 . . . . . 263
Tunis 12205 . . . . . 205
Turkey Creek 11472. . . . . 378
Turkey Point 11463 . . . . . 394

Turner Creek 11512. . . . . 277
Turners Cut 12206 . . . . . 360
Turtle Harbor 11462 . . . . . 344
Turtle Mound 11484 . . . . . 317
Turtle River 11506 . . . . . 282
Turtle Shoal Anchorage 11449 . . . 346
Tybee Creek 11512, 11505 . . . . . 276
Tybee Island 11512 . . . . . 276
Tybee Light 11512, 11505 . . . . . 264

## U

Umbrella Creek 11489. . . . . 371
Umbrella Cut 11489 . . . . . 371
Under-keel clearances . . . . . 2
Upper Broad Creek 11552 . . . . . 214
Upper Matecumbe Key 11464 . . . . 395
Upper Spring Creek 11548 . . . . . 210
Upper Spring Creek 11553 . . . . . 362
U.S. Army Corps of Engineers (USACE) 36
U.S. Army Corps of Engineers (USACE) Offices . . . . . 404
U.S. Citizenship and Immigration Services . . . . . 38
U.S. Coast Guard . . . . . 38
U.S. Coast Guard Maritime Security (MARSEC) Levels . . . . . 29
U.S. Customs and Border Protection . . 39
U.S. Nautical Chart Numbering System. 7
U.S. Naval Observatory . . . . . 37
USS Monitor National Marine Sanctuary . . . . . 200

## V

Vaca Key 11449 . . . . . 346, 396
Valhalla 11449 . . . . . 346
Valona 11510 . . . . . 280, 370
Vandemere 11548 . . . . . 212
Varnumtown 11534. . . . . 238
Venetian Causeway 11467 . . . . . 391
Vernon River 11507. . . . . 370
Vernon River 11512. . . . . 277
Vernon View 11507 . . . . . 370
Vero Beach 11472 . . . . . 379
Vessel Arrival Inspections . . . . . 193
Vessel Bridge-to-Bridge Radiotelephone Regulations . . . . . 66
Vessel Watering Points . . . . . 37
VHF-FM Radiotelephone. . . . . 27
Vilano Beach 11485. . . . . 373
Village Creek 11508. . . . . 281
Village Creek 11517. . . . . 260
Virginia Beach 12207 . . . . . 198
Virginia Key 11465 . . . . . 343
Visibilities. . . . . 189

## W

Wabasso 11472. . . . . 379
Waccamaw River 11532 . . . . . 242
Waccamaw River 11534 . . . . . 367
Wachesaw Landing 11534 . . . . . 367
Wade Point 12206 . . . . . 203
Wades Point 11553 . . . . . 362
Wadmalaw River 11518 . . . . . 368
Wadmalaw River 11522 . . . . . 258
Wainwright Island 11550 . . . . . 216
Wainwright Slue 11550 . . . . . 216
Walburg Creek 11507 . . . . . 370
Walburg Creek 11511 . . . . . 278
Wallace Creek 11521 . . . . . 368
Walls Cut 11507 . . . . . 369
Walter Slough 12205 . . . . . 199
Wanchese 12205 . . . . . 199
Wando River 11524, 11526 . . . . . 253
Wappoo Creek 11518 . . . . . 367
Wappoo Creek 11524 . . . . . 252
Wards Bridge 11526. . . . . 254
Wards Creek 11517 . . . . . 260
Washington 11554 . . . . . 211
Wassaw Island 11512 . . . . . 277
Wassaw Sound 11512 . . . . . 276
Wateree River 11531 . . . . . 242
Water hyacinth . . . . . 179
Waties Island 11535. . . . . 238
Watts Cut 11517 . . . . . 259
Watts Cut 11518 . . . . . 368
Waves . . . . . 188
Waves 12204 . . . . . 200
Waycross 11504 . . . . . 287
Weather . . . . . 183
Weeksville 12206. . . . . 361
Weir Point 12204. . . . . 207
Wekiva River 11498. . . . . 310
Welaka 11495 . . . . . 308
West Basin 11478. . . . . 376
West Bay 11548 . . . . . 215
West Bluff Bay 11548 . . . . . 208
West Branch 11527 . . . . . 253
West Channel 11441 . . . . . 350
Western Bar Channel 11537 . . . . 228
Western Channel 11534 . . . . . 367
West Landing 12206 . . . . . 359
Westmouth Bay 11545. . . . . 217
West Palm Beach 11466 . . . . . 325
West Palm Beach 11472 . . . . . 386
West Palm Beach Canal 11467 . . . 386
West Palm Beach Drainage Canal 11428 . . . . . 383
West Sister Rock 11449 . . . . . 346
West Thorofare Bay 11548 . . . . . 215
West Turtle Shoal 11449 . . . . . 346
Whalebone 12205 . . . . . 198
Whale Branch 11519 . . . . . 263
Whale Harbor Channel 11463. . . . 395
Whale Head Bay 12204, 12205 . . . 203
Whichard Beach 11554 . . . . . 211
Whipping Creek 11553 . . . . . 206
Whiskey Creek (Dania Sound) 11467 . 389
White Oak River 11543 . . . . . 226
White Point 11518 . . . . . 368
White Point 11550 . . . . . 216
Whittaker Creek 11541 . . . . . 362
Whittaker Creek 11552 . . . . . 213
Whortonsville 11552 . . . . . 213
Wiggins 11517. . . . . 259
Wilkerson Creek 11553 . . . . . 362
Williamston . . . . . 205
Williman Creek 11519. . . . . 259
Williman Islands 11519 . . . . . 259
Willtown Bluff . . . . . 259
Wilmington 11537 . . . . . 228
Wilmington River 11507. . . . . 369
Wilmington River 11512. . . . . 277
Wilmington Short Cut 11537, 11534 . 365
Wilson Bay 11542 . . . . . 227
Wilson Cove 11487 . . . . . 307
Wilson Key 11463 . . . . . 395
Wimbee Creek 11519 . . . . . 259
Wimble Shoals 12204 . . . . . 199
Wind Chill and Frostbite. . . . . 192
Wind-driven currents . . . . . 183
Windley Harbor 11464 . . . . . 395
Winds . . . . . 3, 190
Windsor . . . . . 206
Winyah Bay 11532 . . . . . 239
Wisteria Island 11447 . . . . . 349, 350
Wolf Island 11508 . . . . . 280
Wolf Island National Wildlife Refuge 11507 . . . . . 370
Woodbine 11504 . . . . . 286
Wood Landing 11552 . . . . . 214
W. P. Franklin Lock 11428 . . . . . 384
Wright Creek 11548. . . . . 210
Wright Creek 11553. . . . . 362
Wright Memorial 12204 . . . . . 203
Wright Monument 12204 . . . . . 198
Wright River 11507. . . . . 369
Wrightsville 11539 . . . . . 227
Wrightsville 11541 . . . . . 364
Wrightsville Beach 11539 . . . . . 227
Wysocking Bay 11555 . . . . . 208

## Y

Yauhannah . . . . . 242
Yellow Bluff 11511 . . . . . 278
Yeopim River 12205. . . . . 204
Yonges Island 11518 . . . . . 368