UNITED STATES Coast Pilot® 3

Atlantic Coast: Sandy Hook, NJ to Cape Henry, VA

2012 (45th) Edition

This edition cancels the 44th Edition, 2011, and has been corrected through 1st Coast Guard District Local Notice to Mariners No. 48/11 and the 5th Coast Guard District Local Notice to Mariners No. 48/11, and includes all previously published corrections.

Changes to this edition will be published in the Fifth 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.

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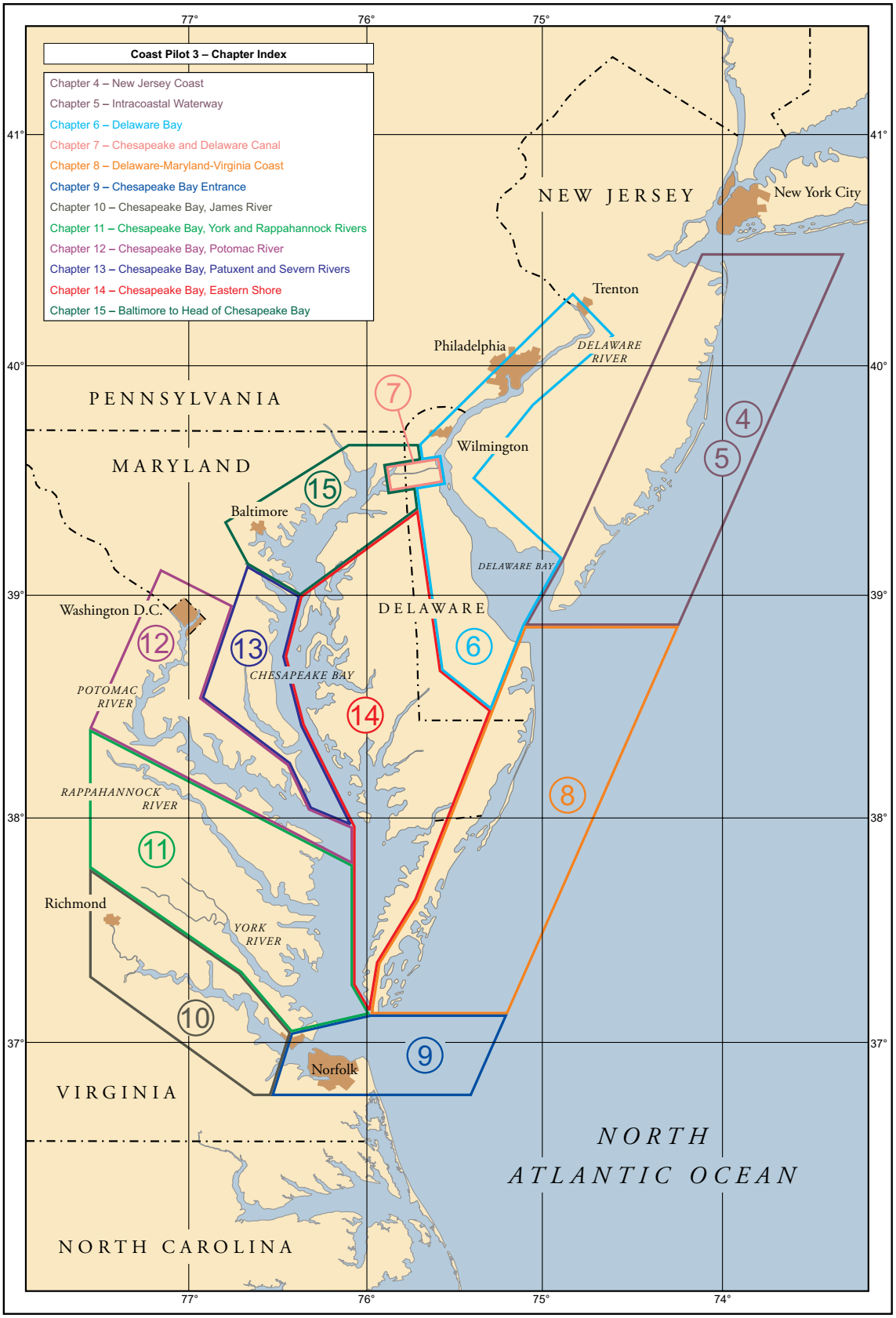
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77°
76°
75°
74°
41°
40°
39°
38°
37°
NEW JERSEY
New York City
Trenton
Philadelphia
DELAWARE RIVER
PENNSYLVANIA
MARYLAND
Wilmington
Baltimore
DELAWARE BAY
Washington D.C.
DELAWARE
CHESAPEAKE BAY
POTOMAC RIVER
RAPPAHANNOCK RIVER
Richmond
YORK RIVER
Norfolk
VIRGINIA
NORTH CAROLINA
NORTH ATLANTIC OCEAN
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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.

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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/

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

Using the Coast Pilot

(6) **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.

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

(8) **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.

(9) 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.

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

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

(12) 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

(13) 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

(14) 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

(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.**

Currents

(16) 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

(17) 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.

(18) 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

(19) 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.

(20) 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.

(21) 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.)

(22) 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.

(23) 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.

(24) 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

(25) 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.

Geographic Coordinates

(26) Geographic coordinates listed in the Coast Pilot are referred to North American Datum of 1983 (NAD 83) unless otherwise noted for certain CFR extracts in Chapter 2.

Heights

(27) 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

(28) 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

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

Radio aids to navigation

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

Ranges

(31) 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

(32) 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

(33) 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

(34) 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

(35) 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

(36) NOAA produces and maintains a suite of nautical charts that cover the coastal waters and Great Lakes of the U.S. and its territories. These 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. NOAA's charts are available in a variety of printed and digital formats designed to meet the specific requirements of all mariners.

(37) Authorized sales agents for NOAA nautical charts and U.S. Coast Pilot volumes are located in many U.S. ports and in some foreign countries. A listing of agents is available at aeronav.faa.gov/agents.asp. Catalogs showing the limits of all NOAA nautical charts are available at nauticalcharts.noaa.gov/mcd/ccatalogs.htm. To obtain paper copies of any the five regional catalogs (see Appendix A for list), contact an authorized sales agent.

Paper Nautical Charts

(38) Lithographically printed, these large format charts are on durable paper, in full color, and have been used by navigators since the age of sail. They are relied on today by professional mariners, the U.S. Navy and Coast Guard, and are widely used by recreational boaters.

(39) The NOAA BookletChart™ is an experimental product that can be printed by the user for free. They are made to help recreational boaters locate themselves on the water. The Booklet Chart is reduced in scale and divided into pages for convenience, but otherwise contains all the information of the full-scale nautical chart. For more information visit http://www.nauticalcharts.noaa.gov/staff/BookletChart.html.

Revised Reprint Nautical Charts

(40) 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.

Print On Demand Nautical Charts

(41) 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 http://nauticalcharts.noaa.gov/pod/POD.htm and http://www.oceangraphix.com. POD charts are certified by NOAA for navigational use.

Raster Navigational Charts (NOAA RNC®)

(42) NOAA Raster Navigational Charts (NOAA RNC®) are geo-referenced digital images of NOAA's entire suite of paper charts. NOAA RNCs are official data that can be used in many types of electronic charting systems, including Raster Chart Display Systems (RCDS) and some Electronic Chart Display and Information Systems (ECDIS). Current regulations support the use of RNCs as a primary means of navigation when ENCs are not available, but they require an accompanying minimal set of up-to-date paper charts. They can integrate position information from the Global Positioning System (GPS) and other navigational sensors, such as radar and automatic identification systems (AIS) to show a vessel's track, waypoints, and planned routes. NOAA RNCs and their weekly updates are available free of charge at http://www.nauticalcharts.noaa.gov/mcd/Raster/index.htm.

Electronic Navigational Charts (NOAA ENC®)

(43) NOAA Electronic Navigational Charts (NOAA ENC®) are databases of charted objects and their attributes with standardized content, structure, and format. They comply with International Hydrographic Organization (IHO) specifications stated in IHO Publication S-57. They may be used as an alternative to paper charts required on SOLAS class vessels.

(44) ENCs are intended for use in electronic charting systems (ECS) as well as Electronic Chart Display and Information Systems (ECDIS). ECDIS are programmable to show as much or as little data as the user requires. They can integrate position information from the Global Positioning System (GPS) and other navigational sensors, such as radar and automatic identification systems (AIS) to show a vessel's track, waypoints, and planned routes. Using this information ECDIS can use ENCs to give warning of impending danger in relation to the vessel's position and movement. NOAA ENCs and their updates are available free of charge at http://nauticalcharts.noaa.gov/mcd/enc/index.htm.

Corrections to charts

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

(46) 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.

Nautical Chart Numbering System

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

Chart Scale

(48) 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**.

(49) 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:

(50) **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.

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

(52) **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.

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

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

Chart Projections

(55) 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, tidal waters

(56) 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. (For information on Great Lakes Datum, see Coast Pilot 6.)

Horizontal Datum

(57) 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.

(58) 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.

(59) 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 some geographic positions may still be 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.

(60) 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

(61) 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.

(62) 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.

(63) 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.

(64) 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

(65) 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:

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

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

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

(69) 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.

(70) 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.

(71) 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.

(72) 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.

Source Diagrams

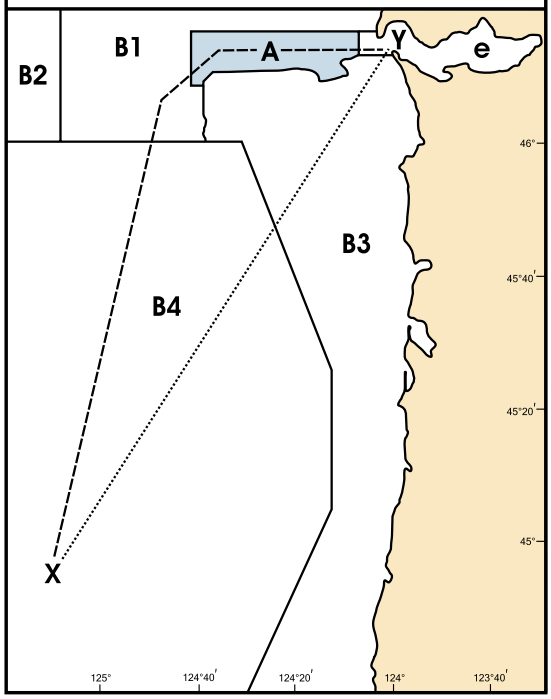
Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown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

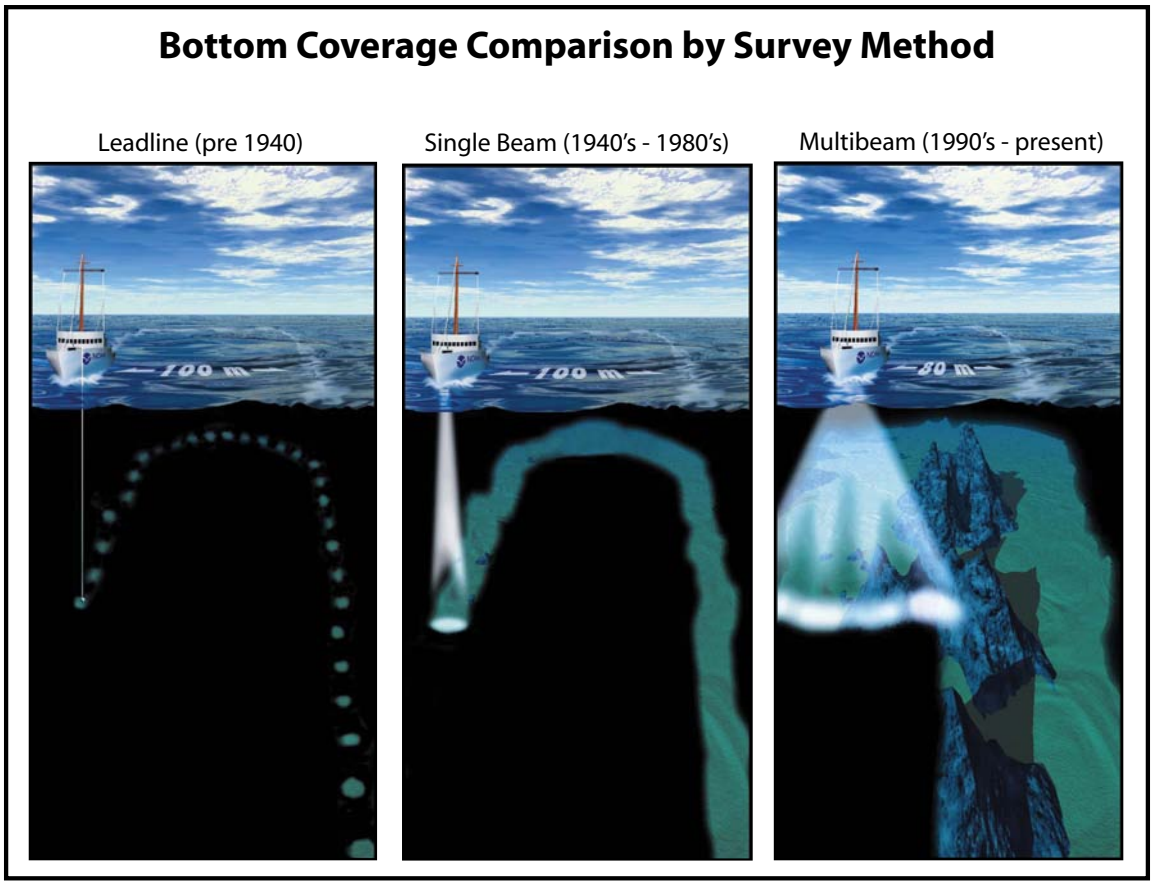
• The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution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



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 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.

(73) 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.

(74) 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.

Chart symbols, abbreviations and terms

(75) The standard symbols and abbreviations approved for use on nautical charts produced by the U.S. Government are described in **Chart No. 1, United States of America Nautical Chart Symbols, Abbreviations and Terms.** This reference, jointly maintained by the National Geospatial-Intelligence Agency (NGA) and NOAA, is available at http://nauticalcharts.noaa.gov/mcd/chartno1.htm.

(76) Some symbols and abbreviations used on foreign charts, including reproductions of foreign charts made by NGA, are different than those used on U.S. charts. It is recommended that mariners who use foreign charts

also obtain the symbol sheet or Chart No. 1 produced by the appropriate foreign agency.

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

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.

NOTICES TO MARINERS

(97) **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.

(98) **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/.

(99) **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.

(100) 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.

(101) **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.)

(102) 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

(103) 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.

(104) 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. 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

(105) 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.

(106) **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.

(107) **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.)

(108) 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;

(109) 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.

(110) 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.

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

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

(113) 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.

(114) 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.

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

(116) 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.

(117) 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.

(118) 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.

(119) 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.

(120) 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.

(121) 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

(122) 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.

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

Daybeacons

(124) 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.

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

Articulated daybeacons

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

Buoys

(127) 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.

(128) 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.

(129) 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.

(130) 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

(131) 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.

(132) 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.

(133) 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.

(134) 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

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

(136) 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.

(137) 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

(138) 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.

(139) 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.

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

Light Lists

(141) 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

(142) **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.

(143) 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.

(144) **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

(145) 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

(146) 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.

(147) **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

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

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

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

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

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

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

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

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

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

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

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

(159) (12) The radiotelegraph alarm signal.

(160) (13) The radiotelephone alarm signal.

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

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

(163) (16) A dye marker.

Radio distress procedures

(164) 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.

(165) 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

(166) (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.

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

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

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

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

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

(172) the distress signal MAYDAY;

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

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

(175) the nature of the distress;

(176) the kind of assistance desired;

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

(178) present seaworthiness of vessel;

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

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

(181) your listening frequency and schedule;

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

(183) (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:

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

(185) the words THIS IS;

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

(187) The words RECEIVED MAYDAY.

(188) 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:

(189) the word MAYDAY;

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

(191) the words THIS IS;

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

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

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

(195) (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.

(196) (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:

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

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

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

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

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

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

(203) the words THIS IS;

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

(205) 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.

(206) (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:

(207) the distress signal MAYDAY;

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

(209) the words THIS IS;

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

(211) the time;

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

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

Optimize Radar Profile

(214) 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

(215) 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

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

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

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

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

(220) (i) identity;

(221) (ii) position;

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

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

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

(225) (i) 2182 kHz (radiotelephone).

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

(227) (f) Operate radar continuously;

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

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

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

(231) (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.

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

(233) (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;

(234) (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;

(235) (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;

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

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

(238) (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;

(239) (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

(240) 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,

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

(242) (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.

(243) (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.

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

(245) (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.

(246) 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

(247) 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.

(248) 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:

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

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

(251) 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.

(252) 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.

(253) 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.

(254) 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.

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

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

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

(258) (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.

(259) 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:

(260) (a) Wind direction and force.

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

(262) (c) Other pertinent weather information.

(263) 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.

(264) 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.

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

(266) 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.

(267) 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.

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

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

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

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

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

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

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

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

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

(277) (j) What caused the emergency?

Helicopter evacuation of personnel

(278) 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.

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

(280) (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.

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

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

(283) (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.

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

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

(286) (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.

(287) (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.

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

(289) (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.

(290) (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.

(291) **Hoist operations:**

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

(293) (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).

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

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

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

(297) (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.

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

(299) (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.

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

(301) (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.

(302) (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.

(303) (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.**

(304) (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.

(305) (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

(306) 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:

(307) Vessel's name and call sign.

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

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

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

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

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

(313) Any known history of similar illness.

(314) Location and type of pain.

(315) Medical supplies carried on board vessel.

(316) Medication given to patient.

(317) Weather.

(318) Communication schedule and frequency.

Coast Guard droppable, floatable pumps

(319) 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.

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

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

(322) (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.

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

Medical advice

(324) 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.)

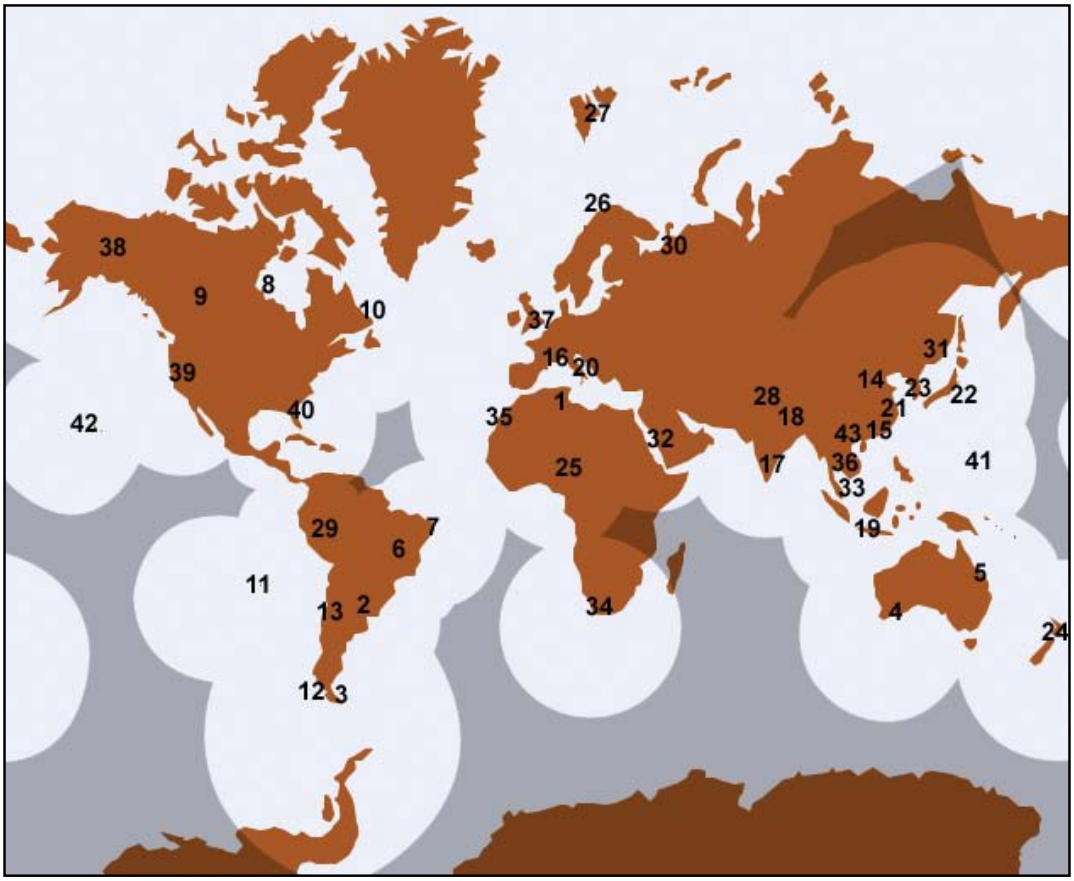
EMERGENCY POSITION INDICATING RADIOBEACONS (EPIRB)

(325) 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.

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

(326) **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.

(327) 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.

(328) 406 MHz emergency locating transmitters (ELTs) for aircraft are currently available and 406 MHz personnel locating beacons (PLBs) are also available.

(329) 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.

(330) Proper registration of your 406 MHz EPIRB is intended to save your life, and is mandated by Federal Communications Commission regulations; the Coast Guard is enforcing this FCC registration rule.

(331) 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:

(332) Beacon Registration

(333) NOAA/NESDIS

(334) NSOF, E/SP3

(335) 4231 Suitland Road

(336) Suitland, MD 20746

(337) (fax: 301–817–4565)

(338) or call toll free at **888–212–SAVE** (888–212–7283) for further information or a copy of the registration form. From outside the U.S., call: 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

(339) 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.

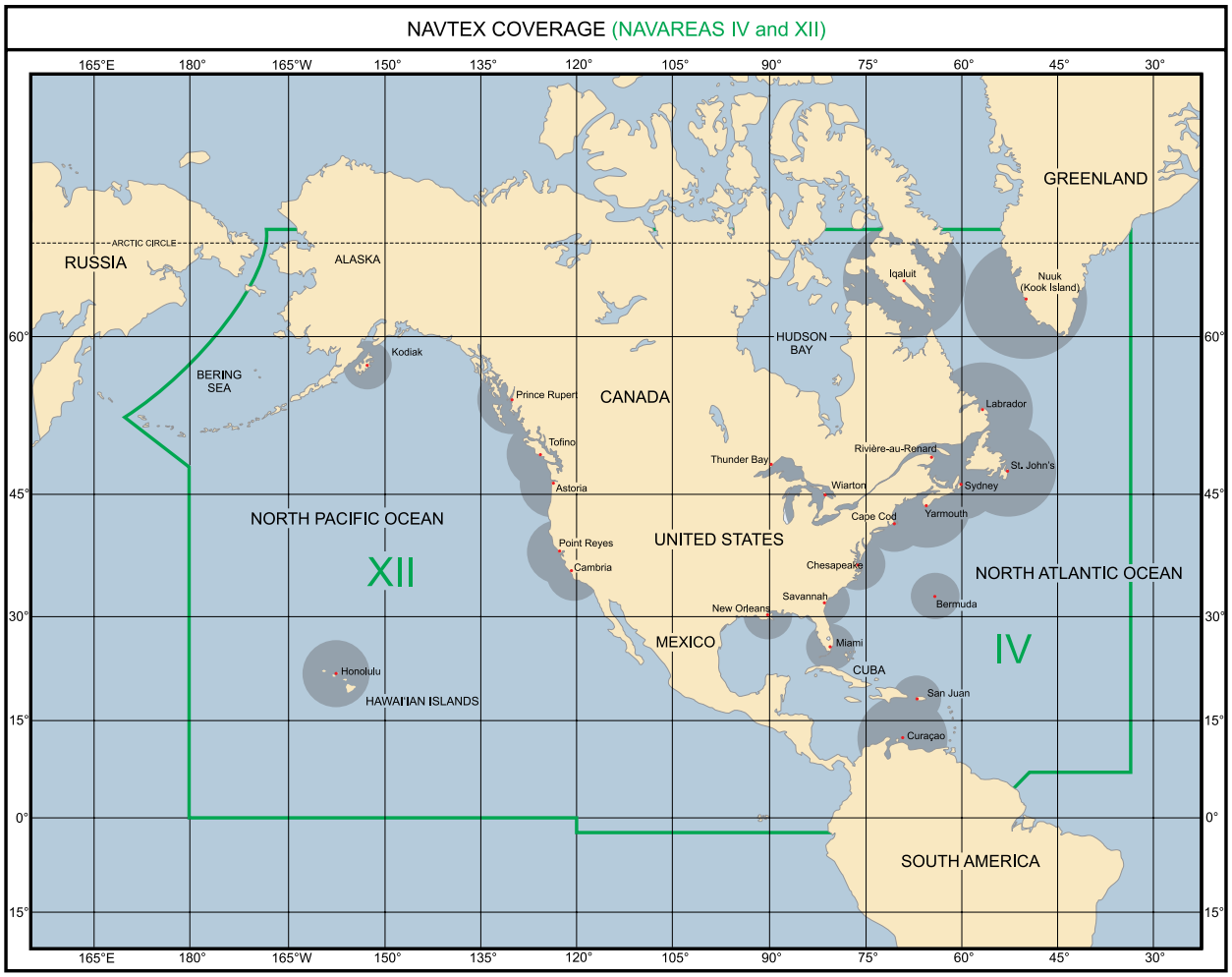
Testing EPIRBs

(340) 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.

(341) **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

(342) 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

(343) 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.

(344) 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.

(345) 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.

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

(347) 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.

(348) 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.

(349) 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.

(350) 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.

(351) 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

(352) 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

(353) 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).

(354) 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

(355) 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.

(356) 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.

(357) 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) See Appendix A, U.S. NAVTEX Transmitting Stations, for a list of NAVTEX broadcast stations covered by this Coast Pilot 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 ocean waves generated by any rapid large-scale disturbance of the sea water. Most tsunamis are generated by earthquakes, but they may also be caused by volcanic eruptions, landslides, undersea slumps or meteor impacts.

(371) The waves radiate outward in all directions from the disturbance and can propagate across entire ocean basins. Tsunami waves are distinguished from ordinary ocean waves by their great length between peaks, often exceeding 100 miles in the deep ocean, and by the long interval of time between these peaks, ranging from five minutes to an hour. The speed at which tsunamis travel depends on the ocean depth. A tsunami can exceed 500 knots in the deep ocean but slows to 20 or 30 knots in the shallow water near land. In less than 24 hours, a tsunami can cross the entire Pacific Ocean.

(372) In the deep ocean, a tsunami is barely noticeable and will only cause a small and slow rising and falling of the sea surface as it passes. Only as it approaches

land does a tsunami become a hazard. As the tsunami approaches land and shallow water, the waves slow down and become compressed, causing them to grow in height. In the best of cases, the tsunami comes onshore like a quickly rising tide and causes a gentle flooding of low-lying coastal areas. In the worst of cases, a bore will form.

(373) A bore is a wall of turbulent water that can exceed several yards in height and can rush onshore with great destructive power. Behind the bore is a deep and fast-moving flood that can pick up and sweep away almost anything in its path. Minutes later, the water will drain away as the trough of the tsunami wave arrives, sometimes exposing great patches of the sea floor, then the water will rush in again as before, causing additional damage. This destructive cycle may repeat many times before the hazard finally passes. 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) Tsunamis do not have a season and do not occur regularly or frequently. Yet they pose a major threat to the coastal populations of the Pacific and other world oceans and seas. Nothing can be done to prevent them, but their adverse impact can be reduced with proper planning. The loss of life and property can be lessened if shipmasters and others acquaint themselves with the behavior of these waves so that intelligent action can be taken when they become imminent.

(375) A tsunami warning is issued when a potential tsunami with significant inundation is imminent or expected. Warnings alert the public that widespread, dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after arrival of the initial wave. Warnings also alert emergency management officials to take action for the entire tsunami hazard zone. When a tsunami warning has been issued use a NOAA Weather Radio or stay tuned to a Coast Guard emergency frequency station, or a local radio or television station for updated emergency information.

(376) NOAA oversees the U.S. Tsunami Program with its mission to provide a 24-hour detection and warning system and increase public awareness about the threat of tsunamis. The NOAA National Weather Service operates two tsunami warning centers The West Coast/Alaska Tsunami Warning Center in Palmer, Alaska (http://wcatwc.arh.noaa.gov/), and the Richard H. Hagemeyer Pacific Tsunami Warning Center in Ewa Beach, Hawaii (http://ptwc.weather.gov/ptwc/index.php). These centers continuously monitor data from seismological and tidal stations, evaluate earthquakes that have the potential to generate tsunamis and disseminate tsunami information and warning bulletins to government authorities and the public.

Storm surge

(377) 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.

(378) **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**.

(379) 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

(380) 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.

(381) 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.

(382) 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.

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

Wind Chill and Frostbite

(383) 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.

(384) 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.

(385) 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.

(386) 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

(387) The Federal Water Pollution Control Act (FWPCA) or Clean Water Act (CWA) was passed to restore and maintain the chemical, physical and biological integrity of our nation's waters.

No-Discharge Zones

(388) 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.

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

(390) 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.)

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

Oil Pollution

(392) 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 (800–424–8802, nationwide 24 hour number).

The Act to Prevent Pollution from Ships

(393) 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.

(394) 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.

(395) 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.

(396) 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.

(397) 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.

(398) 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).

(399) 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.

(400) 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

(401) 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.

(402) 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.

(403) 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

(404) 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)

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

(406) (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.

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

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

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

(410) (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.

(411) (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.

(412) (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

(413) (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.

(414) (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.

(415) (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.

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

(417) (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.

(418) (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.

(419) (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.

(420) (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

(421) 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:

(422) (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.

(423) (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.

(424) (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.

(425) (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.

(426) 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.

(427) 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:

(428) Release of dye marker.

(429) Release of air bubble.

(430) Ejection of oil.

(431) Pounding on the hull.

(432) 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

(433) 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

(434) 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:

(435) (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;

(436) (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;

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

(438) (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.

(439) 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.

(440) **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

(441) 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

Channel	Ship Frequency (MHz)		Channel Usage
	Transmit	Receive	
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.

to be initially made on VHF-FM channel 16. U.S. Coast Guard stations do not guard VHF-FM channel 9.

(442) 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.

(443) 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

(444) 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

(445) 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.

(446) 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.

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

Danger signal

(448) 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

(449) 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.

Homeland Security Advisory System

(450) 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

(451) 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.

(452) **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.

(453) **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.

(454) **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)

(455) 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.

(456) 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.

(457) 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).

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

(459) 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.

(460) 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.

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

(462) 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.

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

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

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

(466) 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.

(467) **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.

(468) 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.

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

Traffic Separation Schemes

(470) In the approaches to Portland, Maine

(471) In the Approaches to Boston, Massachusetts

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

(473) Off New York

(474) Off Delaware Bay

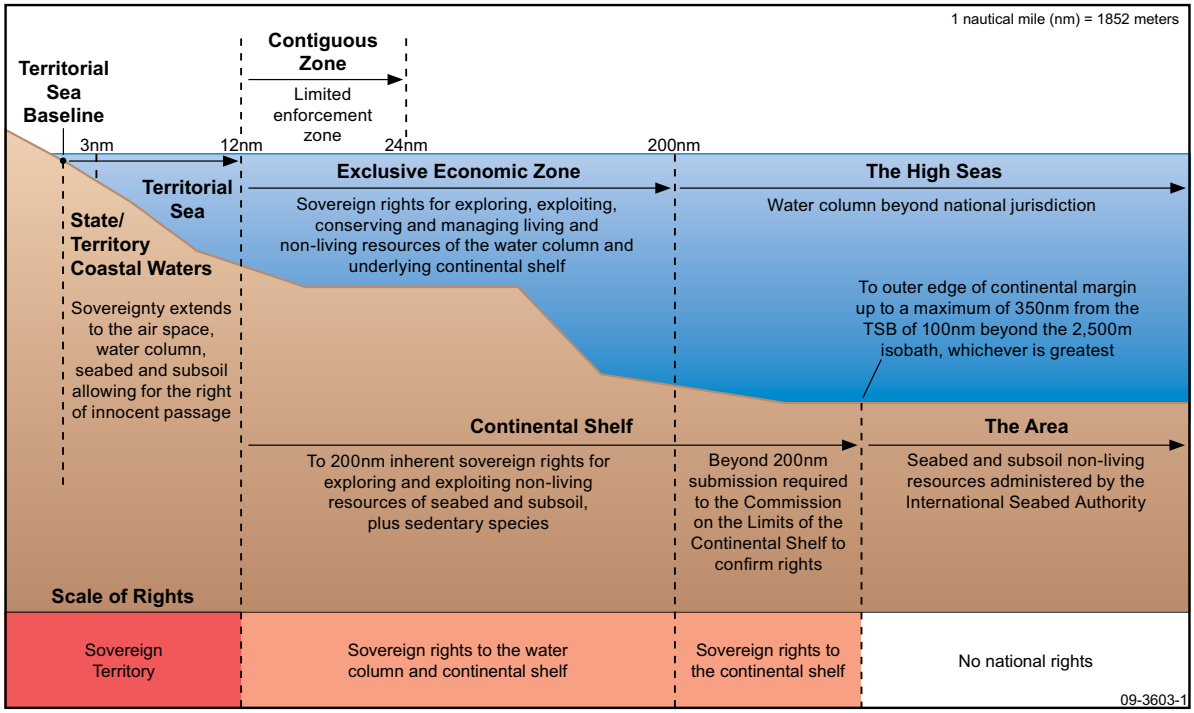


Figure 1: Offshore extent of the maritime zones recognized under international law

(475) In the approaches to Chesapeake Bay, including a deep water route
(476) In the Approaches to Cape Fear River
(477) In the Approaches to Galveston Bay
(478) Off San Francisco
(479) In the Santa Barbara Channel
(480) In the Approaches to Los Angeles-Long Beach
(481) In the Strait of Juan de Fuca and its approaches
(482) In Puget Sound and its approaches
(483) In Haro Strait, Boundary Pass, and the Strait of Georgia
(484) In Prince William Sound, Alaska

Areas to Be Avoided

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

No Anchoring Areas

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

Recommended Tracks

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

Two-way Route

(499) In the Strait of Juan de Fuca
(500) 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

(501) 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

(502) 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

(503) 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

(504) 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

(505) 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.

(506) 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.

(507) 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

(508) 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.

(509) 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

(510) 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)

(511) 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

(512) 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

(513) 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.

(514) 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)

(515) 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.

(516) 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)

(517) 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 (Western Regional Center).

(518) 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.

(519) **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.

(520) 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	866–257–6787
Cherry Point, WA	888–817–7794
Chesapeake Bay	866–247–6787
Columbia River, Lower	888–537–6787
Delaware River and Bay	866–307–6787
Gulfport, MS	888–257–1858
Houston/Galveston	866–447–6787
Lake Charles	888–817–7692
Los Angeles/Long Beach	not available
Mississippi River	888–817–7767
Mobile Bay, AL	877–847–6787
Narragansett Bay, RI	866–757–6787
New Haven, CT	888–807–6787
New York/New Jersey Harbor	866–217–6787
Pascagoula, MS	888–257–1857
Sabine Neches	888–257–1859
San Francisco Bay	866–727–6787
Soo Locks, MI	301–713–9596 (toll)
Tacoma, WA	888–607–6787
Tampa Bay, FL	866–827–6787

(521) **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.

(522) **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.)

(523) **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.

(524) 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.)

(525) 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

(526) 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.

(527) 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.

(528) 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.

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

Marine Weather Forecasts

(530) 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.)

(531) 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.)

(532) 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.)

(533) 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.

(534) 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** illustration for additional information.)

(535) 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.

(536) 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.

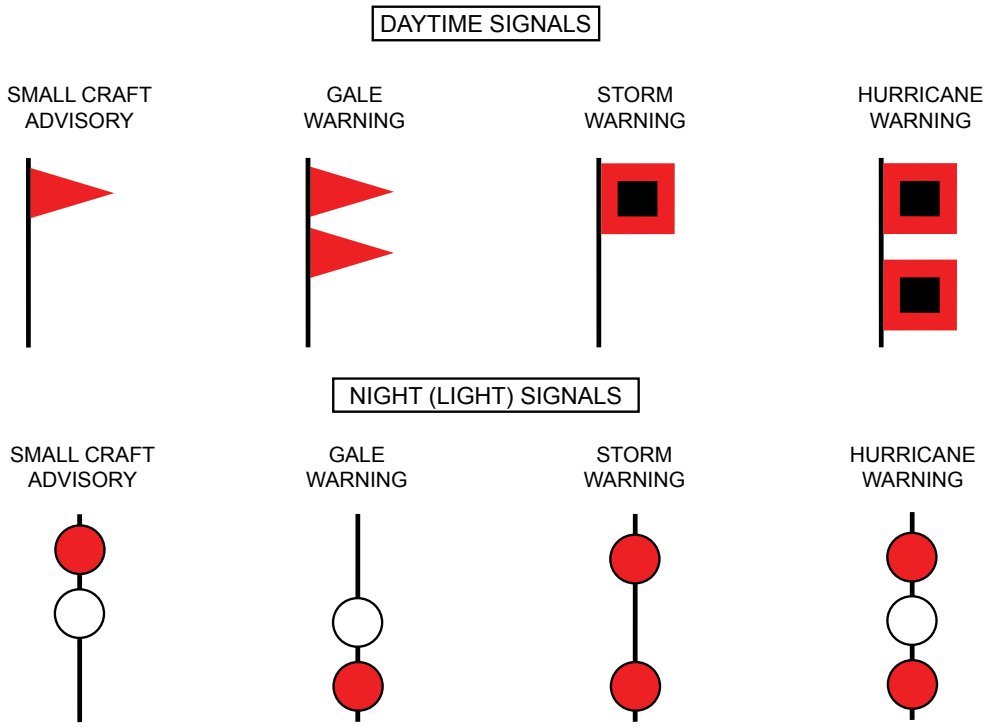
(537) Information on how ships, commercial fishermen, offshore industries, and others in the coastal zone may participate in the marine observation program is available from **National Weather Service Port Meteorological Officers (PMOs)**. Port Meteorological Officers are located in major U.S. port cities 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)

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

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

NATIONAL WEATHER SERVICE COASTAL WARNING DISPLAYS



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.

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

(540) 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)

(541) 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)

(542) 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.

(543) **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.

(544) 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.)

(545) 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.

(546) **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

(547) 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)

(548) 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

(549) 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

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

(551) 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.

(552) 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.

(553) Ill person means person who:

(554) 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

(555) 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.

(556) 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.

(557) 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

(558) 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.

(559) 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

(560) 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.

(561) 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.

(562) 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.

(563) 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.

(564) 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.

(565) 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.

(566) 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.

(567) 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.)

(568) **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.

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

(570) 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.

(571) 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.)

(572) **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

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

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

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

(576) • salvage

(577) • dredging and towing by foreign vessels

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

(579) • regular and special tonnage taxes on vessels

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

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

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

(583) • illegally imported merchandise

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

(585) 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.

(586) 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	

(587) 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)

(588) 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.).

(589) 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.

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

(591) 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.)

(592) 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.

(593) 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)

(594) 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 33 (33 CFR): Navigation and Navigable Waters

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

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

(5) Part 80, COLREGS Demarcation Lines

(6) Part 110, Anchorage Regulations

(7) Part 117, Drawbridge Operation Regulation

(8) Part 157, Rules for the Protection of the Marine Environment relating to Tank Vessels carrying Oil in Bulk (in part)

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

(10) Part 162, Inland Waterway Navigation Regulations

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

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

(13) Part 166, Shipping Safety Fairways

(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 46 (46 CFR): Shipping

(19) Part 15, Manning Requirements

Title 50 (50 CFR): Wildlife and Fisheries

(20) Part 222, General Endangered and ThreatenedMarine Species

(21) Part 224, Endangered Marine and Anadromous Species.

(22) Part 226, Designated Critical Habitat

Note

(23) 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:

(24) **U.S. Coast Guard:** (33 CFR 26, 80, 110, 117, 157, 160, 162, 164, 165, and 169; 46 CFR 15);

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

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

TITLE 33–NAVIGATION AND NAVIGABLE WATERS

Part 26–Vessel Bridge-to-Bridge Radiotelephone Regulations

§26.01 Purpose

(27) (a) The purpose of this part is to implement the provisions of the Vessel Bridge-to-Bridge Radiotelephone Act. This part–

(28) (1) Requires the use of the vessel bridge-to-bridge radiotelephone;

(29) (2) Provides the Coast Guard's interpretation of the meaning of important terms in the Act;

(30) (3) Prescribes the procedures for applying for an exemption from the Act and the regulations issued under the Act and a listing of exemptions.

(31) (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.

(32) For the purpose of this part and interpreting the Act–

(33) Secretary means the Secretary of the Department in which the Coast Guard is operating;

(34) Act means the "Vessel Bridge-to-Bridge Radiotelephone Act", 33 U.S.C. sections 1201–1208;

(35) Length is measured from end to end over the deck excluding sheer;

(36) Power-driven vessel means any vessel propelled by machinery; and

(37) Towing vessel means any commercial vessel engaged in towing another vessel astern, alongside, or by pushing ahead.

(38) 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.

(39) 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.

(40) **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.

(41) (a) Unless an exemption is granted under §26.09 and except as provided in paragraph (a)(4) of this section, this part applies to:

(42) (1) Every power-driven vessel of 20 meters or over in length while navigating;

(43) (2) Every vessel of 100 gross tons and upward carrying one or more passengers for hire while navigating;

(44) (3) Every towing vessel of 26 feet or over in length while navigating; and

(45) (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.

(46) (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.

(47) (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.

(48) (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).

(49) (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):

(50) (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;

(51) (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 the Inner Harbor Navigation Canal; and

(52) (3) The full length of the Inner Harbor Navigation Canal from its junction with the Mississippi River to that canal's entry to Lake Pontchartrain at the New Seabrook vehicular bridge.

(53) (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).

(54) **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.

(55) (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.

(56) (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.

(57) (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.

(58) (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.

(59) (e) On those navigable waters of the United States within a VTS area, the designated VTS frequency is an additional designated frequency required to be monitored in accordance with §26.05.

§26.05 Use of radiotelephone.

(60) 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.

(61) Section 6 of the Act states–(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.

(62) 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.

(63) (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.

(64) (b) Any person may petition for an exemption from any provision of the Act or this part;

(65) (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:

(66) (1) The provisions of the Act or this part from which an exemption is requested; and

(67) (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.

(68) (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.

(69) (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.

(70) 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

(71) 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.

(72) (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.

(73) (b) The waters inside of the lines are Inland Rules waters. The waters outside the lines are COLREGS waters.

(74) (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.

§80.165 New York Harbor.

(75) A line drawn from East Rockaway Inlet Breakwater Light to Sandy Hook Light.

§80.170 Sandy Hook, NJ to Tom's River, NJ.

(76) (a) A line drawn from Shark River Inlet North Breakwater Light 2 to Shark River Inlet South Breakwater Light 1.

(77) (b) A line drawn from Manasquan Inlet North Breakwater Light 4 to Manasquan Inlet South Breakwater Light 3.

(78) (c) A line drawn from Barnegat Inlet North Breakwater Light 4A to the seaward extremity of the submerged Barnegat Inlet South Breakwater; thence along the submerged breakwater to the shoreline.

§80.501 Tom's River, NJ to Cape May, NJ.

(79) (a) A line drawn from the seaward tangent of Long Beach Island to the seaward tangent to Pullen Island across Beach Haven and Little Egg Inlets.

(80) (b) A line drawn from the seaward tangent of Pullen Island to the seaward tangent of Brigantine Island across Brigantine Inlet.

(81) (c) A line drawn from the seaward extremity of Absecon Inlet.

(82) (d) A line drawn from the southernmost point of Longport at 39°18.2'N., 74°32.1'W. to the northeastern-most point of Ocean City at 39°17.6'N., 74°33.1'W. across Great Egg Harbor Inlet.

(83) (e) A line drawn parallel with the general trend of highwater shoreline across Corson Inlet.

(84) (f) A line formed by the centerline of the Townsend Inlet Highway Bridge.

(85) (g) A line formed by the shoreline of Seven Mile Beach and Hereford Inlet Light.

(86) (h) A line drawn from Cape May Inlet East Jetty Light 4 to Cape May Inlet West Jetty Light 5.

§80.503 Delaware Bay.

(87) A line drawn from Cape May Light to Harbor of Refuge Light; thence to the northernmost extremity of Cape Henlopen.

§80.505 Cape Henlopen, DE, to Cape Charles, VA.

(88) (a) A line drawn from the seaward extremity of Indian River Inlet North Jetty to Indian River Inlet South Jetty Light.

(89) (b) A line drawn from Ocean City Inlet Light 6, 225° true across Ocean City Inlet to the submerged south breakwater.

(90) (c) A line drawn from Assateague Beach Tower Light to the tower charted at 37°52.6'N., 75°26.7'W.

(91) (d) A line formed by the range of Wachapreague Inlet Light 3 and Parramore Beach Lookout Tower drawn across Wachapreague Inlet.

(92) (e) A line drawn from the lookout tower charted on the northern end of Hog Island to the seaward tangent of Parramore Beach.

(93) (f) A line drawn 207° true from the lookout tower charted on the southern end of Hog Island across Great Machipongo Inlet.

(94) (g) A line formed by the range of the two cupolas charted on the southern end of Cobb Island drawn across Sand Shoal Inlet.

(95) (h) Except as provided elsewhere in this section from Cape Henlopen to Cape Charles, lines drawn parallel with the general trend of the highwater shoreline across the entrances to small bays and inlets.

§80.510 Chesapeake Bay Entrance, VA.

(96) A line drawn from Cape Charles Light to Cape Henry Light.

Part 110–Anchorage Regulations

§110.1 General.

(97) (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).

(98) (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).

(99) (c) All bearings in the part are referred to true meridian.

(100) (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

§110.65 Indian River Bay, DE.

(101) Beginning at a point bearing 174°, 300 feet, from a point on the southerly edge of the project channel 5,500 feet westerly from the State highway bridge across Indian River Inlet; thence 174°, 600 feet; thence 264°, 800 feet; thence 354°, 600 feet; and thence 84°, 800 feet, to the point of beginning.

§110.67 Delaware River, Essington, PA.

(102) North of Little Tinicum Island, between the mouth of Darby Creek and Jansen Avenue, Essington, bounded as follows: Beginning at a point (approximately 39°51'31"N., 75°17'43"W.) on a line in prolongation of the westerly line of Jansen Avenue 135 yards southerly from the mean high water line; thence 184°, 300 yards; thence 274°30', 1,700 yards; thence 04°, 425 yards; thence 100°, 1,225 yards; and thence 95°, 490 yards, to the point of beginning.

§110.70 Chesapeake and Delaware Canal, easterly of Courthouse Point, MD.

(103) The waters southerly of a line joining the northernmost extremity of Courthouse Point and the westernmost point of Herring Island; westerly of a line bearing 180° from a point on the aforesaid line 220 yards from the westernmost point of Herring Island; and northerly and easterly of the shore line.

§110.70a Northeast River, North East, MD.

(104) The water area west of North East Heights, Maryland enclosed by a line beginning on the shoreline at latitude

(105) 39°34'26"N., 75°57'18"W.; thence westerly to

(106) 39°34'26"N., 75°57'29"W.; thence northeasterly to

(107) 39°34'30"N., 75°57'27"W.; thence easterly to the shoreline at

(108) 39°34'30"N., 75°57'18"W.; thence southerly following the shoreline to the point of beginning.

§110.71 Jacobs Nose Cove, Elk River, MD.

(109) The water area of Jacobs Nose Cove, on the west side of the mouth of Elk River, Maryland, comprising the entire cove south of Jacobs Nose as defined by the shoreline and a line bearing **046°–226°** true across the entrance of the cove tangent to the shore on both the north and south sides.

§110.71a Cabin Creek, Grasonville, MD

(110) The waters of Cabin Creek, Maryland, enclosed by a line drawn from

(111) 38°56'34"N., 76°12'49"W., on the western shore to

(112) 38°56'28"N., 76°12'29"W., on the eastern shore; thence following the general line of the shore to the point of beginning.

§110.71b Wye River, Wye, MD.

(113) The waters of a cove on the western shore of Wye River opposite Drum Point enclosed by a line drawn from

(114) 38°53'17"N., 76°11'23"W., to

(115) 38°53'18"N., 76°11'23"W., to

(116) 38°53'18"N., 76°11'13"W.; thence following the shoreline to the point of beginning.

§110.72 Blackhole Creek, MD.

(117) The waters on the west side of Blackhole Creek, a tributary of Magothy River, southwest of a line bearing 310°30' from the most northerly tip of an unnamed island located 0.16 mile upstream from the mouth of the creek approximately 660 feet to the west shore of the creek; northwest of a line ranging from the southwesterly tip of the island toward the point of land on the west shore of the creek immediately southwest thereof; and north of a line 100 feet from and parallel to the shore of the creek to its intersection with the south property line extended of the Potapskut Sailing Association, Inc., thence northwesterly along the said property line extended to the shore.

§110.72a Chester River, southeast of Chestertown, MD.

(118) The waters of the Chester River enclosed by a line beginning at a point on the Rolph Marina pier at latitude 39°10'25"N., 76°02'17"W.; thence 327° to a point 400 feet southwest of the entrance to Hambleton Creek at 39°10'55"N., 76°02'40"W.; thence northeasterly to the eastern side of the entrance to Hambleton Creek; thence southerly following the shoreline to the Rolph Point Marina pier; thence southwesterly along the Rolph Point Marina pier to the point of beginning.

Subpart B–Anchorage Grounds

§110.157 Delaware Bay and River.

(119) (a) The anchorage grounds–(1) Anchorage A off the entrance to Mispillion River. In Delaware Bay southwest of Brandywine Channel beginning at

(120) 38°53'57"N., 75°08'00"W., thence northwesterly to

(121) 39°01'22"N., 75°13'25"W., thence southwesterly to

(122) 39°00'49"N., 75°14'57"W., thence southeasterly to

(123) 38°53'22"N., 75°09'26"W., thence northeasterly to the point of beginning. Supervision over the anchoring of vessels and over all cargo transfer operations in Anchorage A is exercised by the Captain of the Port, Philadelphia. The regulations of paragraphs (b)(1) and (b)(2) of this section do not apply to this anchorage.

(124) (2) Anchorage 1 off Bombay Hook Point. On the southwest side of the channel along Liston Range, bounded as follows: Beginning at a point (approximately 39°17'59"N., 75°23'07"W.) bearing 228° from Ship John Shoal Light, 167 yards southwest of the southwest edge

of the channel along Liston Range; thence 228°, 2,000 yards; thence 318°, 8,000 yards; thence 48°, 2,000 yards; and thence 138°, 8,000 yards, to the point of beginning.

(125) (3) Anchorage 2 northwest of Artificial Island. On the east side of the channel along Reedy Island Range, bounded as follows: Beginning at a point bearing 105° from the northernmost point of Reedy Island, 167 yards easterly of the east edge of the channel along Reedy Island Range; thence 105°, 800 yards; thence 195°, 4,500 yards; thence 285°, 800 yards to a point (approximately latitude 39°28'58", longitude 75°33'37") opposite the intersection of Reedy Island and Baker Ranges; and thence 15°, 4,500 yards, to the point of beginning.

(126) (4) Anchorage 3 southeast of Reedy Point. Southeast of the entrance to the Chesapeake and Delaware Canal at Reedy Point, bounded on the east by the west edge of the channel along Reedy Island and New Castle Ranges; on the west by a line beginning at a point on the west edge of the channel along Reedy Island Range at 39°31'43"N., thence to a point bearing 168°30', 3,150 yards, from Chesapeake and Delaware Canal 2 Light, and thence to a point bearing 131°, 1,160 yards, from Chesapeake and Delaware Canal 2 Light; and on the north by a line running from the last-described point 113°30', approximately 813 yards, to the west edge of the channel along New Castle Range.

(127) (5) Anchorage 4 north of Reedy Point. North of the entrance to the Chesapeake and Delaware Canal at Reedy Point, on the west side of the river, bounded as follows: Beginning at a point (approximately 39°33'51"N., 75°33'35"W.) 344°58' true, 160 yards from Chesapeake and Delaware Canal Light 2; thence 306°26', 1,442 yards; thence 36°26', 377 yards; thence 126°26', 1,442 yards; thence 216°26', 377 yards to the point of beginning.

(128) (6) Anchorage 5 southeast of Pea Patch Island. On the northeast side of the channel along New Castle Range, bounded as follows: Beginning at 39°34'28"N., 75°33'06"W.; thence 334°, 2,343 yards; thence 64°, 512 yards; thence 154°, 2,343 yards; and thence 244°, 512 yards, to the point of beginning.

(129) (7) Anchorage 6 off Deepwater Point. Southeast of the entrance to Christina River, on the east side of the channel along Cherry Island Range, bounded as follows: Beginning at 39°41'31"N., 75°30'55"W.; thence 17°, 2,747 yards; thence 112°, 847 yards; thence 215°, 1,340 yards; thence 204°, 893 yards; thence 186°30', 500 yards; and thence 286°, 377 yards, to the point of beginning. Vessels must not cast anchor in the cable area at the lower end of this anchorage except in case of emergency.

(130) (8) Anchorage 7 off Marcus Hook. (i) On the southeast side of the channel along Marcus Hook Range, bounded by a line connecting the following points:

(131) 39°49'17"N., 75°22'50"W.

(132) 39°48'39"N., 75°23'17"W.

(133) 39°47'45"N., 75°25'01"W.

(134) 39°47'43"N., 75°26'00"W.

(135) (DATUM: NAD 83)

(136) (ii) A vessel that is arriving from or departing for sea and that requires an examination by public health, customs, or immigration authorities shall anchor in the preferential area of this anchorage designated for the use of vessels awaiting quarantine inspection, this area being the waters bounded by the arc of a circle with a radius of 366 yards and with the center located at:

(137) 39°48'46"N., 75°23'26"W.

(138) (DATUM: NAD 83)

(139) (iii) Should the remainder of the anchorage be in use, the preferential area, when available, may be used by vessels not subject to quarantine inspection.

(140) (9) Anchorage 8 off Thompson Point. On the south side of the channel along Tinicum Range, between Thompson Point and the east side of Crab Point, bounded as follows: Beginning at a point on the south edge of the channel along Tinicum Range at longitude 75°18'24"; thence easterly along the edge of the channel to longitude 75°17'54"; thence 179°, 267 yards; thence 260°30', 793 yards; thence 358°, 425 yards, to the point of beginning.

(141) (10) Anchorage 9 near entrance to Mantua Creek. On the southeast side of the channel along Mifflin Range, bounded as follows: Beginning at a point on the southeast edge of the channel at longitude 75°14'26"; thence northeasterly along the edge of the channel to longitude 75°12'01.5"; thence 203°30', 933 yards; thence 233°30', 3,058 yards; and thence 263°30', 933 yards, to the point of beginning. Vessels must not cast anchor in this anchorage in such manner as to interfere unreasonably with the passage of other vessels to and from Mantua Creek.

(142) (11) Anchorage 10 (naval) at Naval Base, Philadelphia. On the north side of the channel along West Horseshoe Range, bounded as follows: Beginning at the southeasterly corner of Pier 7 (approximately latitude 39°53'11", longitude 75°09'58.5"); thence 174°, 525 yards, to the north edge of the channel along West Horseshoe Range; thence 273°30' along the edge of the channel, 880 yards; thence 354°, 433 yards, to the southeasterly corner of Pier 1; and thence 88°30', 875 yards, to the point of beginning. This is a restricted naval anchorage.

(143) (12) Anchorage 11 at Gloucester. On the east side of the channel south of the Walt Whitman Bridge at Gloucester, bounded as follows: Beginning at a point on the east edge of the channel at latitude 39°54'16"; thence 174°30', 500 yards, to latitude 39°54'02", longitude 75°07'43"; thence 202°, 1,133 yards; thence 217°30', 1,142 yards, to the east edge of channel; thence northeasterly along the edge of the channel to the point of beginning.

(144) (13) Anchorage 12 between Gloucester and Camden. On the east side of the channel adjoining and on the upstream side of Anchorage 11, from Gloucester to Camden, bounded as follows: Beginning at a point on the east edge of the channel at latitude 39°54'16";

thence northerly along the edge of the channel to latitude 39°56'32.5"; thence 133°, 283 yards to a point on a line 100 feet west of the established pierhead line; thence southerly along this line to latitude 39°54'34"; thence 196°16', 882 yards to latitude 39°54'08.5"; thence 354°36', 267 yards to the point of beginning. The area between New York Shipbuilding Corporation Pier No. 2 and the MacAndrews and Forbes Company pier, Camden, shall be restricted to facilitate the movement of carfloats to and from Bulson Street, Camden. The area in front of the Public Service Electric and Gas Company pier shall be restricted to facilitate the movement of vessels to and from the pier. Should the anchorage become so congested that vessels are compelled to anchor in these restricted areas, they must move immediately when another berth is available.

(145) (14) Anchorage 13 at Camden. On the east side of the channel adjoining and on the upstream side of Anchorage 12, to Cooper Point, Camden, bounded as follows: Beginning at a point on the east edge of the channel at latitude 39°56'32.5"; thence northerly along the edge of the channel to latitude 39°57'39.7"; thence 139°, 217 yards to a point on a line 100 feet west of the established pierhead line; thence southerly along this line to latitude 39°56'26.5"; thence 313°, 283 yards to the point of beginning.

(146) (15) Anchorage 14 opposite Port Richmond. On the southeast side of the channel, north of Petty Island, bounded as follows: Beginning at a point on the southeast edge of the channel at longitude 75°05'43"; thence 163°, 248 yards; thence 253°, 1,978 yards, to the southeast edge of the channel; and thence northeasterly along the edge of the channel to the point of beginning. Vessels having a draft of less than 20 feet must anchor southwest of Pier No. 11, Port Richmond. The area off the Cities Service Oil Company wharves, Petty Island, shall be restricted to facilitate the movement of vessels to and from the wharves.

(147) (16) Anchorage 15 off northeasterly end of Petty Island. On the southeast side of the channel, bounded as follows: Beginning at a point on the southeast edge of the channel at longitude 75°05'34.7"; thence northeasterly along the southeast edge of the channel to longitude 75°05'09.5"; thence 171°, 198 yards; thence 260°30', 667 yards; and thence 351°, 198 yards, to the point of beginning. When necessary, this anchorage will be reserved for vessels under the custody of the United States, at which time other vessels may be required by the Captain of the Port to shift position.

(148) (17) Anchorage 16 between Port Richmond and Five Mile Point. On the northwest side of the channel, bounded as follows: Beginning at a point on the northwest edge of the channel at longitude 75°05'35"; thence northeasterly along the edge of the channel to longitude 75°04'20"; thence 328°, 125 yards; thence 243°, 450 yards; thence 251°, 475 yards; thence 257°, 1,042 yards; thence 174°30', 122 yards, to the point of beginning. When necessary, this anchorage will be reserved for vessels under the custody of the United States, at which time other vessels may be required by the Captain of the Port to shift position.

(149) (b) General regulations. (1) Except in cases of great emergency, no vessel shall be anchored in Delaware Bay and River between Ship John Light and The Pennsylvania Railroad Company bridge at Delair, New Jersey, outside of the anchorage areas established in this section, or within a cable or pipe line area shown on a Government chart, or be moored, anchored, or tied up to any pier, wharf, or other vessel in such manner as to obstruct or endanger the passage of any vessel. When an emergent condition exists due to congestion in the prescribed anchorage areas in the Delaware River, the Captain of the Port may authorize the anchorage of vessels in locations other than the prescribed areas. Vessels so anchored must not be anchored within the channel limits. Any vessel anchored outside of the prescribed anchorage limits must move to a prescribed anchorage area when space becomes available.

(150) (2) No vessel shall occupy any prescribed anchorage for a longer period than 48 hours without a permit from the Captain of the Port. Vessels expecting to be at anchor more than 48 hours shall obtain a permit from the Captain of the Port for that purpose. No vessel in such condition that it is likely to sink or otherwise become a menace or obstruction to navigation or anchorage of other vessels shall occupy an anchorage except in an emergency, and then only for such period as may be permitted by the Captain of the Port.

(151) (3) Whenever, in the opinion of the Captain of the Port such action may be necessary, he may require any or all vessels in any designated anchorage area to moor with two or more anchors.

(152) (4) (Reserved)

(153) (5) Anchors shall be placed well within the anchorage areas, so that no portion of the hull or rigging will at any time extend outside of the anchorage area.

(154) (6) Light-draft barges using the anchorages shall be anchored away from the deeper portions of the anchorages, so as not to interfere with the anchoring of deep-draft vessels. Any barges towed in tandem to an anchorage area shall be bunched together when anchoring.

(155) (7) Upon approval of the District Engineer, Corps of Engineers, the Captain of the Port may permit wrecking plant or other vessels legally engaged in recovering sunken property, or in laying or repairing pipe lines or cables, or plant engaged in dredging operations, to anchor in channels. Such permission is not necessary for plant engaged upon works of river and harbor improvement under the supervision of the District Engineer, but the District Engineer will notify the Captain of the Port in advance of all such proposed work.

(156) (8) (Reserved)

(157) (9) A vessel upon being notified to shift its position shall get under way at once or signal for a tug and shall

change position as directed with reasonable promptness.

(158) (10) Nothing in this section shall be construed as relieving any vessel or 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 laws relating to lights and fog signals or other navigation laws and regulations.

(159) (11) Annually from September 1 until December 31, additional requirements and restrictions in this paragraph for the use of anchorages defined in paragraphs (a)(7), (a)(8), and (a)(10) of this section apply.

(160) (i) Before anchoring in Anchorage 7 off Marcus Hook, as described in paragraph (a)(8) of this section, a vessel must first obtain permission from the Captain of the Port, Philadelphia, at least 24 hours in advance of arrival. Permission to anchor will be granted on a "first-come, first-served" basis. The Captain of the Port, Philadelphia, will allow only one vessel at a time to be at anchor in Anchorage 7, and no vessel may remain within Anchorage 7 for more than 12 hours. Any vessel arriving from or departing to sea that requires an examination by the public health service, customs or immigration authorities will be directed to an anchorage for the required inspection by the Captain of the Port on a case-by-case basis.

(161) (ii) For Anchorage 6 off Deepwater Point, as described in paragraph (a)(7) of this section, and Anchorage 9 as described in paragraph (a)(10) of this section.

(162) (A) Any vessel 700 feet or greater in length requesting anchorage shall obtain permission from the Captain of the Port, Philadelphia, Pennsylvania, at least 24 hours in advance.

(163) (B) Any vessel from 700 to 750 feet in length shall have one tug alongside at all times while the vessel is at anchor.

(164) (C) Any vessel greater than 750 feet in length shall have two tugs alongside at all times while the vessel is at anchor.

(165) (D) The Master, owner or operator of a vessel at anchor shall ensure that any tug required by this section is of sufficient horsepower to assist with necessary maneuvers to keep the vessel clear of the navigation channel.

(166) (iii) As used in this section, Captain of the Port means the Commander of Sector Delaware Bay or any Coast Guard commissioned, warrant or petty officer who has been authorized by the Captain of the Port to act on his behalf. The Captain of the Port may be contacted by telephone at 215–271–4807 or via VHF marine band radio, channel 16.

(167) (c) Regulations for vessels carrying and handling explosives. (1) All vessels carrying explosives as defined in and subject to, Title 49 Code of Federal Regulations, Parts 171–177, or on which such explosives are to be loaded, shall obtain a permit from the Captain of the Port, except as provided in paragraph (c)(5) of this section. The maximum amount of explosives for which a permit is required in 49 CFR Parts 171–177, which may be carried or loaded at any time by a vessel shall not exceed 800 tons, except in cases of great emergency or by special permit from the Captain of the Port. This written permit shall be obtained from the Captain of the Port before vessels carrying explosives or on which explosives are to be loaded within the weight limit specified in paragraph (c)(1) of this section, may anchor in any anchorage. Permits will not be issued for Anchorage 2 under any circumstances. Such permit may be revoked at any time. All vessels used in connection with loading, or unloading explosives shall carry written permits from the Captain of the Port, and shall show such permit whenever required by him or his representative.

(168) (2) Vessels handling explosives shall be anchored so as to be at least 2,200 feet from any other vessel, but the number of vessels which may anchor in an anchorage at any one time shall be at the discretion of the Captain of the Port. This provision is not intended to prohibit barges or lighters from tying up alongside the vessels for the transfer of cargo.

(169) (3) Whenever a vessel or barge not mechanically self-propelled anchors while carrying explosives or while awaiting the loading of explosives, the Captain of the Port may require the attendance of a tug upon such vessel or barge when in his judgment such action is necessary.

(170) (4) Fishing and navigation are prohibited within an anchorage whenever occupied by an anchored vessel displaying a red flag.

(171) (5) The District Engineer, U.S. Army Corps of Engineers, may authorize, in writing, a vessel carrying explosives for use on river and harbor works or on other work under Department of the Army permit, to anchor in or near the vicinity of such work. The Captain of the Port will prescribe the conditions under which explosives shall be stored and handled in such cases.

(172) (6) Vessels carrying explosives or on which explosives are to be loaded, within the weight limit specified in paragraph (c)(1) of this section, shall comply with the general regulations in paragraph (b) of this section when applicable.

(173) (7) Nothing in this section shall be construed as relieving any vessel or the owner or person-in-charge of any vessel, and all others concerned, of the duties and responsibilities imposed upon them to comply with the regulations governing the handling, loading or discharging of explosives entitled "Subchapter C-Hazardous Materials Regulations" (49 CFR Parts 171 through 177).

§110.158 Baltimore Harbor, MD.

(174) North American Datum 1983.

(175) (a) Anchorage Grounds.

(176) (1) Anchorage No. 1, general anchorage.

(177) (i) The waters bounded by a line connecting the following points:

(178) 39°15'13.51"N., 76°34'07.76"W.
(179) 39°15'11.01"N., 76°34'11.69"W.
(180) 39°14'52.98"N., 76°33'52.67"W.
(181) 39°14'47.90"N., 76°33'40.73"W.
(182) (ii) No vessel shall remain in this anchorage for more than 12 hours without permission from the Captain of the Port.
(183) (2) Anchorage No. 2, general anchorage.
(184) (i) The waters bounded by a line connecting the following points:
(185) 39°14'46.23"N., 76°33'25.82"W.
(186) 39°14'56.96"N., 76°33'37.15"W.
(187) 39°15'08.55"N., 76°33'37.65"W.
(188) 39°15'19.28"N., 76°33'24.49"W.
(189) 39°15'19.33"N., 76°33'14.32"W.
(190) 39°15'14.19"N., 76°32'57.76"W.
(191) 39°15'06.87"N., 76°32'45.48"W.
(192) 39°14'41.37"N., 76°32'27.38"W.
(193) 39°14'30.93"N., 76°32'33.52"W.
(194) 39°14'46.27"N., 76°32'49.69"W.
(195) 39°14'43.76"N., 76°32'53.62"W.
(196) 39°14'57.51"N., 76°33'08.13"W.
(197) (ii) No vessel shall remain in this anchorage for more than 72 hours without permission from the Captain of the Port.
(198) (3) Anchorage No. 3, Upper, general anchorage.
(199) (i) The waters bounded by a line connecting the following points:
(200) 39°14'32.48"N., 76°33'11.31"W.
(201) 39°14'46.23"N., 76°33'25.82"W.
(202) 39°14'57.51"N., 76°33'08.13"W.
(203) 39°14'43.76"N., 76°32'53.62"W.
(204) (ii) No vessel shall remain in this anchorage for more than 24 hours without permission from the Captain of the Port.
(205) (4) Anchorage No. 3, Lower, general anchorage.
(206) (i) The waters bounded by a line connecting the following points:
(207) 39°14'32.48"N., 76°33'11.31"W.
(208) 39°14'46.27"N., 76°32'49.69"W.
(209) 39°14'30.93"N., 76°32'33.52"W.
(210) 39°14'24.40"N., 76°32'39.87"W.
(211) 39°14'15.66"N., 76°32'53.58"W.
(212) (ii) No vessel shall remain in this anchorage for more than 72 hours without permission from the Captain of the Port.
(213) (5) Anchorage No. 4, general anchorage.
(214) (i) The waters bounded by a line connecting the following points:
(215) 39°13'52.91"N., 76°32'29.60"W.
(216) 39°14'05.91"N., 76°32'43.30"W.
(217) 39°14'07.30"N., 76°32'43.12"W.
(218) 39°14'17.96"N., 76°32'26.41"W.
(219) 39°14'05.32"N., 76°32'13.09"W.
(220) 39°14'00.46"N., 76°32'17.77"W.
(221) (ii) No vessel shall remain in this anchorage for more than 72 hours without permission from the Captain of the Port.
(222) (6) Anchorage No. 5, general anchorage.
(223) (i) The waters bounded by a line connecting the following points:
(224) 39°14'07.89"N., 76°32'58.23"W.
(225) 39°13'34.82"N., 76°32'23.66"W.
(226) 39°13'22.25"N., 76°32'28.90"W.
(227) 39°13'21.20"N., 76°33'11.94"W.
(228) (ii) No vessel shall remain in this anchorage for more than 72 hours without permission from the Captain of the Port.
(229) (7) Anchorage No. 6, general anchorage.
(230) (i) The waters bounded by a line connecting the following points:
(231) 39°13'42.98"N., 76°32'19.11"W.
(232) 39°13'20.65"N., 76°31'55.58"W.
(233) 39°13'34.00"N., 76°31'33.50"W.
(234) 39°14'01.95"N., 76°32'02.65"W.
(235) 39°13'51.01"N., 76°32'18.71"W.
(236) (ii) No vessel shall remain in this anchorage for more than 72 hours without permission from the Captain of the Port.
(237) (8) Anchorage No. 7, Dead ship anchorage.
(238) (i) The waters bounded by a line connecting the following points:
(239) 39°13'00.40"N., 76°34'10.40"W.
(240) 39°13'13.40"N., 76°34'10.81"W.
(241) 39°13'13.96"N., 76°34'05.02"W.
(242) 39°13'14.83"N., 76°33'29.80"W.
(243) 39°13'00.40"N., 76°33'29.90"W.
(244) (ii) The primary use of this anchorage is to lay up dead ships. Such use has priority over other uses. Permission from the Captain of the Port must be obtained prior to the use of this anchorage for more than 72 hours.
(245) (b) Definitions. As used in this section: Class 1 (explosive) materials means Division 1.1, 1.2, 1.3, and 1.4 explosives, as defined in 49 CFR 173.50; Dangerous cargo means certain dangerous cargo as defined in Sec. 160.203 of this title.
(246) (c) General regulations. (1) Except as otherwise provided, this section applies to vessels over 20 meters long and all vessels carrying or handling dangerous cargo or Class 1 (explosive) materials while anchored in an anchorage ground described in this section.
(247) (2) Except in cases where unforeseen circumstances create conditions of imminent peril, or with the permission of the Captain of the Port, no vessel shall be anchored in Baltimore Harbor and Patapsco River outside of the anchorage areas established in this section for more than 24 hours. No vessel shall anchor within a tunnel, cable or pipeline area shown on a government chart. No vessel shall be moored, anchored, or tied up to any pier, wharf, or other vessel in such manner as to extend into established channel limits. No vessel shall be positioned so as to obstruct or endanger the passage of any other vessel.
(248) (3) Except in an emergency, a vessel that is likely to sink or otherwise become a menace or obstruction

to navigation or the anchoring of other vessels may not occupy an anchorage, unless the vessel obtains a permit from the Captain of the Port.

(249) (4) The Captain of the Port may grant a revocable permit to a vessel for a habitual use of an anchorage. Only the vessel that holds the revocable permit may use the anchorage during the period that the permit is in effect.

(250) (5) Upon notification by the Captain of the Port to shift its position, a vessel at anchor shall get underway and shall move to its new designated position within 2 hours after notification.

(251) (6) The Captain of the Port may prescribe specific conditions for vessels anchoring within the anchorages described in this section, including, but not limited to, the number and location of anchors, scope of chain, readiness of engineering plant and equipment, usage of tugs, and requirements for maintaining communication guards on selected radio frequencies.

(252) (7) No vessel at anchor or at a mooring within an anchorage may transfer oil to or from another vessel unless the vessel has given the Captain of the Port the four hours advance notice required by §156.118 of this chapter.

(253) (8) No vessel shall anchor in a "dead ship" status (propulsion or control unavailable for normal operations) without prior approval of the Captain of the Port.

(254) (d) Regulations for vessels handling or carrying dangerous cargoes or Class 1 (explosive) materials. (1) This paragraph (d) applies to every vessel, except a U.S. naval vessel, handling or carrying dangerous cargoes or Class 1 (explosive) materials.

(255) (2) The Captain of the Port may require every person having business aboard a vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials while in an anchorage, other than a member of the crew, to hold a form of identification prescribed in the vessel's security plan.

(256) (3) Each person having business aboard a vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials while in an anchorage, other than a member of the crew, shall present the identification prescribed by paragraph (d)(2) of this section to any Coast Guard Boarding Officer who requests it.

(257) (4) Each non-self-propelled vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials must have a tug in attendance at all times while at anchor.

(258) (5) Each vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials while at anchor must display by day a bravo flag in a prominent location and by night a fixed red light.

§110.159 Annapolis Harbor, MD.

(259) (a) The Anchorage Grounds–(1) Naval Anchorage for Deep Draft Vessels. In the Chesapeake Bay, bounded on the north by latitude 38°58'00"; on the east by a line bearing 203° from latitude 38°58'00", longitude 76°24'00"; on the south by latitude 38°56'30"; and on the west by a line bearing 139° from Greenbury Point Shoal Light. This anchorage is reserved for deep draft naval vessels. Berths in the area will be assigned on application to the Superintendent, U.S. Naval Academy.

(260) (2) Middle Ground Anchorage. Beginning at a point in the Severn River 139°, 620 yards from Triton Light (located at the intersection of the northeast and southeast seawall of the Naval Academy grounds); thence easterly to a point 112°30', 970 yards from Triton Light; thence southeasterly to a point 274°, 1,045 yards from the radio tower at the tip of Greenbury Point; thence south-southeasterly to a point 233°30', 925 yards from the radio tower at the tip of Greenbury Point; thence west to a point 295°, 1,015 yards from Greenbury Point Shoal Light; thence northwesterly to the point of beginning.

(261) (3) South Anchorage. In the Severn River, beginning at a point on the shoreline at Horn Point, Eastport, 168°, 1,190 yards from Triton Light; thence east to a point 294°, 1,075 yards from Greenbury Point Shoal Light; thence northwest to a point 143°, 595 yards from Triton Light; thence westerly to a point 209°, 700 yards from Triton Light; thence 180° to a point on the shoreline at Eastport. No vessel shall anchor within 100 feet of any wharf, marine railway, or other structure without the permission of the owner thereof.

(262) (4) Naval Anchorage for Small Craft. In the Severn River, beginning at a point 80 feet off the southeast seawall of the Naval Academy bearing 132° from Triton Light; thence easterly to a point 072°30', 285 yards from Triton Light; thence southeasterly to a point 109°, 785 yards from Triton Light; thence westerly to a point 211°, 537 yards from Triton Light; thence northwesterly to a point 45 yards off the southeast seawall of the Naval Academy bearing 214°, 535 yards from Triton Light; thence northeasterly to the point of beginning. Except in the case of emergency, no vessel shall be anchored in this area without the permission of the Superintendent, U.S. Naval Academy. Anchorages will be assigned upon request to the Superintendent, U.S. Naval Academy.

(263) (5) Spa Creek Anchorage. In Spa Creek, those waters bounded by a line connecting the following points:

(264) 38°58'37.3"N., 76°28'48.1"W.

(265) 38°58'36.1"N., 76°28'57.8"W.

(266) 38°58'31.6"N., 76°29'03.3"W.

(267) 38°58'26.7"N., 76°28'59.5"W.

(268) Datum: NAD 83

(269) **Note.**–The City Council of Annapolis has promulgated local ordinances to control the building of structures, and mooring and anchorage of vessels in anchorages (a)(3), and (a)(5). These local ordinances will be enforced by the local harbormaster.

(270) (b) The regulations. (1) Except in the case of emergency, no vessel shall be anchored in the area to the north and east of the Annapolis Channel bounded on the east by Greenbury Point; on the south by a line bearing 270° from the southern tip of Greenbury Point; on the

west by the Annapolis Channel; on the north by the southern boundary of the cable area and the shoreline of the Government reservation and Carr Creek.

(271) (2) Except in the case of emergency, no vessel shall be anchored in Annapolis Harbor to the westward of the dredged channel and northward of the southern boundary of the South Anchorage outside of the established anchorage areas, except in Spa Creek and the area to the southwestward of the Naval anchorage for small craft. No vessel shall be so anchored that any part of the vessel extends at any time within this area. Any vessel anchoring, under great emergency, within this area shall be placed as close to an anchorage area as practicable, and shall move away immediately after the emergency ceases.

(272) (3) No vessel shall be anchored in the cable and pipeline area, lying between the Naval Academy and the Naval Ship Research and Development Laboratory and having the following limits: Southeastern limit, from Triton Light 072° to white "Cable Crossing" sign at the Naval Ship Research and Development Laboratory; northwestern limit, a line bearing 054° from the Capitol Dome.

(273) (4) Except in the case of emergency, no vessel shall be anchored, without permission of the Superintendent, U.S. Naval Academy, in the Naval Academy Drill area described as follows:

(274) That portion of the Severn River lying to the northeastward of the Naval Academy, bounded on the north by the State Highway Bridge and on the south by the northern limit of the cable and pipeline area, excluding that area off the eastern shoreline enclosed by a line bearing approximately 131° from the eastern abutment of the State Highway Bridge to the vicinity of Ferry Point. This drill area also includes the lower part of Dorseys Creek below the Naval Academy Drawbridge. Requests to anchor in this drill area shall be made to the Superintendent, U.S. Naval Academy.

(275) (5) The restrictions in this section do not apply to the anchoring or marking by buoys or apparatus used for the purpose of taking seafood, except within the cable or pipeline area described in paragraph (b)(3) of this subsection.

(276) (6) The regulations in paragraph (b) shall be enforced by the Superintendent, U.S. Naval Academy, and such agencies as he may designate.

§110.166 York River, VA, naval anchorage.

(277) (a) The anchorage grounds. Between Yorktown and the Naval Mine Depot, beginning at

(278) 37°15'34"N., 76°31'25"W.; thence to

(279) 37°15'25"N., 76°31'39.5"W.; thence to

(280) 37°16'21.5"N., 76°32'46"W.; thence to

(281) 37°17'07.5"N., 76°34'17"W.; thence to

(282) 37°17'55"N., 76°35'14.5"W.; thence to

(283) 37°18'05"N., 76°35'01"W.; thence to

(284) 37°17'20"N., 76°34'07"W.; thence to

(285) 37°16'33.5"N., 76°32'34"W., and thence to the point of beginning.

(286) (b) The regulations. This anchorage is reserved for the exclusive use of naval vessels and except in cases of emergency, no other vessel shall anchor therein without permission from the local naval authorities, obtained through the Captain of the Port, Norfolk, Virginia. Movement of vessels through the anchorage will not be restricted.

§110.168 Hampton Roads, Virginia, and adjacent waters (Datum: NAD 83).

(287) (a) Anchorage Grounds. (1) Anchorage A [Naval Anchorage]. The waters bounded by the shoreline and a line connecting the following points:

(288) 36°55'36.2"N., 76°02'46.3"W.

(289) 36°57'03.3"N., 76°03'01.4"W.

(290) 36°56'45.5"N., 76°01'28.8"W.

(291) 36°55'55.7"N., 76°01'35.7"W.

(292) (2) Chesapeake Bay, Thimble Shoals Channel Anchorages.

(293) (i) Anchorage B [Naval Anchorage]. The waters bounded by a line connecting the following points:

(294) 36°57'58.5"N., 76°06'05.8"W.

(295) 36°57'11.5"N., 76°03'00.9"W.

(296) 36°55'49.3"N., 76°03'12.8"W.

(297) 36°56'32.3"N., 76°06'05.8"W.

(298) 36°57'04.5"N., 76°06'05.8"W.

(299) 36°57'09.0"N., 76°06'23.3"W.

(300) (ii) Anchorage C [Naval Anchorage]. The waters bounded by a line connecting the following points:

(301) 36°58'55.3"N., 76°09'40.3"W.

(302) 36°58'19.3"N., 76°07'16.8"W.

(303) 36°57'27.5"N., 76°07'36.3"W.

(304) 36°58'04.5"N., 76°09'58.8"W.

(305) (iii) Anchorage D [Naval Anchorage]. The waters bounded by the shoreline a line connecting the following points:

(306) 36°55'49.5"N., 76°10'31.6"W.

(307) 36°58'04.5"N., 76°10'00.9"W.

(308) 36°57'31.7"N., 76°07'53.6"W.

(309) 36°55'24.6"N., 76°08'27.6"W.

(310) (iv) Anchorage E [Commercial Explosives Anchorage]. The waters bounded by a line connecting the following points:

(311) 36°59'59.2"N., 76°13'45.8"W.

(312) 36°59'08.7"N., 76°10'32.6"W.

(313) 36°58'13.5"N., 76°10'50.6"W.

(314) 36°59'02.5"N., 76°14'08.9"W.

(315) (v) Explosives Handling Berth E–1 [Explosives Anchorage Berth]. The waters bounded by the arc of a circle with a radius of 500 yards and the center located at:

(316) 36°59'05.5"N., 76°11'21.8"W.

(317) (3) Hampton Roads Anchorages. (i) Anchorage F, Hampton Bar. The waters bounded by a line connecting the following points:

(318) 36°59'25.5"N., 76°20'05.8"W.

(319) 36°59'52.1"N., 76°19'10.8"W.
(320) 36°59'25.7"N., 76°18'47.3"W.
(321) 36°58'49.6"N., 76°19'32.6"W.
(322) (ii) Anchorage Berth F–1. The waters bounded by the arc of a circle with a radius of 500 yards and the center located at:
(323) 36°59'29.6"N., 76°19'13.9"W.
(324) (iii) Anchorage G, Hampton Flats (Naval Explosives Anchorage). The waters bounded by a line connecting the following points:
(325) 36°59'25.0"N., 76°20'07.0"W.
(326) 36°58'49.1"N., 76°19'33.8"W.
(327) 36°57'41.4"N., 76°21'07.7"W.
(328) 36°57'34.6"N., 76°21'26.7"W.
(329) 36°57'31.1"N., 76°22'01.9"W.
(330) 36°58'07.0"N., 76°22'03.0"W.
(331) 36°58'54.8"N., 76°21'42.6"W.
(332) (iv) Explosives Handling Berth G–1. The waters bounded by the arc of a circle with a radius of 500 yards and the center located at:
(333) 36°57'50.5"N., 76°21'37.8"W.
(334) (v) Explosives Handling Berth G–2. The waters bounded by the arc of a circle with a radius of 500 yards and the center located at:
(335) 36°58'14.5"N., 76°21'00.3"W.
(336) (vi) Explosives Handling Berth G–3. The waters bounded by the arc of a circle with a radius of 500 yards and with the center located at:
(337) 36°58'34.2"N., 76°20'31.4"W.
(338) (vii) Explosives Handling Berth G–4. The waters bounded by the arc of a circle with a radius of 500 yards and with the center located at:
(339) 36°58'54.9"N., 76°20'03.2"W.
(340) (viii) Anchorage H, Newport News Bar. The waters bounded by a line connecting the following points:
(341) 36°57'38.8"N., 76°24'18.5"W.
(342) 36°57'52.3"N., 76°22'29.7"W.
(343) 36°58'07.4"N., 76°22'01.8"W.
(344) 36°57'31.6"N., 76°22'00.6"W.
(345) 36°57'18.7"N., 76°24'10.1"W.
(346) (4) James River Anchorages. (i) Anchorage I, Newport News. The waters bounded by a line connecting the following points:
(347) 36°58'49.0"N., 76°27'09.8"W.
(348) 36°58'35.9"N., 76°26'37.2"W.
(349) 36°57'52.2"N., 76°26'01.6"W.
(350) 36°57'31.1"N., 76°25'33.3"W.
(351) 36°57'07.2"N., 76°24'43.1"W.
(352) 36°56'23.1"N., 76°24'26.8"W.
(353) 36°56'03.5"N., 76°24'35.8"W.
(354) 36°57'54.2"N., 76°26'40.3"W.
(355) 36°58'23.5"N., 76°27'09.8"W.
(356) (ii) Anchorage Berth I–1. The waters bounded by the arc of a circle with a radius of 400 yards and the center located at:
(357) 36°57'09.0"N., 76°25'20.4"W.
(358) (iii) Anchorage Berth I–2. The waters bounded by the arc of a circle with a radius of 400 yards and with the center located at:
(359) 36°57'23.8"N., 76°25'46.0"W.
(360) (iv) Anchorage J, Newport News Middle Ground. The waters bounded by a line connecting the following points:
(361) 36°55'59.9"N., 76°22'11.7"W.
(362) 36°55'59.9"N., 76°24'00.0"W.
(363) 36°56'25.3"N., 76°23'48.0"W.
(364) 36°57'10.2"N., 76°24'09.9"W.
(365) 36°57'12.0"N., 76°23'47.3"W.
(366) 36°56'38.5"N., 76°21'39.1"W.
(367) 36°56'38.5"N., 76°20'47.0"W.
(368) (v) Anchorage K, Newport News Middle Ground. The waters bounded by a line connecting the following points:
(369) 36°57'56.4"N., 76°20'30.5"W.
(370) 36°57'08.5"N., 76°20'31.0"W.
(371) 36°56'48.8'N., 76°20'22.5"W.
(372) 36°56'45.0"N., 76°20'32.0"W.
(373) 36°56'45.0"N., 76°21'37.7"W.
(374) 36°57'14.1"N., 76°23'29.1"W.
(375) 36°57'28.1"N., 76°21'11.7"W.
(376) (vi) Anchorage Berth K–1. The waters bounded by the arc of a circle with a radius of 400 yards and with the center located at:
(377) 36°57'30.5"N., 76°20'45.3"W.
(378) (vii) Anchorage Berth K–2. The waters bounded by the arc of a circle with a radius of 400 yards and with the center located at:
(379) 36°57'16.8"N., 76°21'09.5"W.
(380) (viii) Anchorage Berth L, Craney Island Flats. The waters bounded by a line connecting the following points:
(381) 36°55'59.9"N., 76°22'11.7"W.
(382) 36°56'38.5"N., 76°20'45.5"W.
(383) 36°56'30.0"N., 76°20'24.3"W.
(384) 36°56'04.2"N., 76°20'26.2"W.
(385) (5) Elizabeth River Anchorages. (i) Anchorage M, Port Norfolk. The waters bounded by a line connecting the following points:
(386) 36°51'45.7"N., 76°19'31.5"W.
(387) 36°51'45.8"N., 76°19'20.7"W.
(388) 36°51'37.8"N., 76°19'24.3"W.
(389) 36°51'32.5"N., 76°19'31.1"W.
(390) 36°51'40.7"N., 76°19'37.3"W.
(391) 36°51'45.7"N., 76°19'31.5"W.
(392) (ii) Anchorage N, Hospital Point. The waters bounded by a line connecting the following points:
(393) 36°51'05.4"N., 76°18'22.4"W.
(394) 36°50'50.0"N., 76°18'00.0"W.
(395) 36°50'36.7"N., 76°17'52.8"W.
(396) 36°50'33.6"N., 76°17'58.8"W.
(397) 36°50'49.3"N., 76°18'09.0"W.
(398) 36°50'50.3"N., 76°18'07.8"W.
(399) 36°50'56.2"N., 76°18'12.5"W.
(400) 36°51'01.8"N., 76°18'32.3"W.

(401) (iii) Anchorage O, The Hague. The waters of the basin known as 'The Hague', north of the Brambleton Avenue Bridge, except for the area within 100 feet of the bridge span that provides access to and from the Elizabeth River.

(402) (6) Anchorage Q. Quarantine Anchorage. The waters bounded by a line connecting the following points:

(403) 37°17'13.7"N., 76°06'41.6"W.

(404) 37°17'30.3"N., 76°05'53.9"W.

(405) 37°16'25.0"N., 76°05'18.4"W.

(406) 37°16'08.4"N., 76°06'06.0"W.

(407) (i) Anchorage Berth Q–1. The waters bounded by the arc of a circle with a radius of 500 yards and with the center located at:

(408) 37°17'05.7"N., 76°06'08.9"W.

(409) (ii) Anchorage Berth Q–2. The waters bounded by the arc of a circle with a radius of 500 yards with the center located at:

(410) 37°16'33.0"N., 76°05'51.1"W.

(411) (b) Definitions. As used in this section–

(412) Class 1 (explosive) materials means Division 1.1, 1.2, 1.3, and 1.4 explosives, as defined in 49 CFR 173.50.

(413) Dangerous cargo means "certain dangerous cargo" as defined in §160.204 of this title.

(414) 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.

(415) (c) General regulations. (1) Except as otherwise provided, this section applies to vessels over 20 meters long and vessels carrying or handling dangerous cargo or Class 1 (explosive) materials while anchored in an anchorage ground described in this section.

(416) (2) Except as otherwise provided, a vessel may not occupy an anchorage for more than 30 days, unless the vessel obtains permission from the Captain of the Port.

(417) (3) Except in an emergency, a vessel that is likely to sink or otherwise become a menace or obstruction to navigation or to the anchoring of other vessels, may not occupy an anchorage, unless the vessel obtains permission from the Captain of the Port.

(418) (4) The Captain of the Port may, upon application, assign a vessel to a specific berth within an anchorage for a specified period of time.

(419) (5) The Captain of the Port may grant a revocable permit to a vessel for a habitual use of a berth. Only the vessel that holds the revocable permit may use the berth during the period that the permit is in effect.

(420) (6) The Commander, Fifth Coast Guard District, may authorize the establishment and placement of temporary mooring buoys within a berth. Placement of a fixed structure within an anchorage may be authorized by the District Engineer, U.S. Army Corps of Engineers.

(421) (7) If an application is for the long-term lay up of a vessel, the Captain of the Port may establish special conditions in the permit with which the vessel must comply.

(422) (8) Upon notification by the Captain of the Port to shift its position within an anchorage, a vessel at anchor must get underway at once or signal for a tug. The vessel must move to its new location within 2 hours after notification.

(423) (9) The Captain of the Port may prescribe specific conditions for vessels anchoring within the anchorages described in this section, including, but not limited to, the number and location of anchors, scope of chain, readiness of engineering plant and equipment, usage of tugs, and requirements for maintaining communications guards on selected radio frequencies.

(424) (10) A vessel that does not have a sufficient crew on board to weigh anchor at any time must have two anchors in place, unless the Captain of the Port waives this requirement. Members of the crew may not be released until the required anchors have been set.

(425) (11) No vessel at anchor or at a mooring within an anchorage may transfer oil to another vessel unless the vessel has given the Captain of the Port the four hours advance notice required by §156.118 of this title.

(426) (12) Barges may not anchor in the deeper portions of anchorages or interfere with the anchoring of deep-draft vessels.

(427) (13) Barges towed in tandem to an anchorage must be nested together when anchored.

(428) (14) Any vessel anchored or moored in an anchorage adjacent to the Chesapeake Bay Bridge Tunnel or Monitor-Merrimac Bridge Tunnel (MMBT) must be capable of getting underway within 30 minutes with sufficient power to keep free of the bridge tunnel complex.

(429) (15) A vessel may not anchor or moor in an anchorage adjacent to the Chesapeake Bay Bridge Tunnel or Monitor-Merrimac Bridge Tunnel (MMBT) if its steering or main propulsion equipment is impaired.

(430) (d) Regulations for vessels handling or carrying dangerous cargoes or Class 1 (explosive) materials. This paragraph applies to every vessel, except a naval vessel, handling or carrying dangerous cargoes or Class 1 (explosive) materials.

(431) (1) Unless otherwise directed by the Captain of the Port, each commercial vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials must be anchored or moored within Anchorage Berth E–1.

(432) (2) Each vessel, including each tug and stevedore boat, used for loading or unloading dangerous cargoes or Class 1 (explosive) materials in an anchorage, must have permission issued by the Captain of the Port.

(433) (3) The Captain of the Port may require every person having business aboard a vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials while in an anchorage, other than a member of the crew, to hold a form of valid identification.

(434) (4) Each person having business aboard a vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials while in an anchorage, other than a

member of the crew, must present the identification prescribed by paragraph (d)(3) of this section to any Coast Guard boarding officer who requests it.

(435) (5) Each non-self-propelled vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials must have a tug in attendance at all times while at anchor.

(436) (6) Each vessel handling or carrying dangerous cargoes or Class 1(explosive) materials while at anchor must display by day a red flag (Bravo flag) in a prominent location and by night a fixed red light.

(437) (e) Regulations for Specific Anchorages. (1) Anchorages A, B, C, and D. Except for a naval vessel, military support vessel, or vessel in an emergency situation, a vessel may not anchor in Anchorages A, B, C, or D without the permission of the Captain of the Port. The Captain of the Port must consult with the Commander, Naval Amphibious Base Little Creek, before granting a vessel permission to anchor in Anchorages A, B, C, or D.

(438) (2) Anchorage E. (i) A vessel may not anchor in Anchorage E without permission from the Captain of the Port.

(439) (ii) The Captain of the Port must give commercial vessels priority over naval and public vessels.

(440) (iii) The Captain of the Port may at any time revoke permission to anchor in Anchorage E issued under the authority of paragraph (e)(4)(i) of this section.

(441) (iv) A vessel may not anchor in Anchorage Berth E–1, unless it is handling or carrying dangerous cargoes or Class 1 (explosive) materials.

(442) (v) A vessel may not anchor within 500 yards of Anchorage Berth E–1 without the permission of the Captain of the Port, if the berth is occupied by a vessel handling or carrying dangerous cargoes or Class 1 (explosive) materials.

(443) (3) Anchorage F. A vessel having a draft less than 45 feet may not anchor in Anchorage F without the permission of the Captain of the Port. No vessel may anchor in Anchorage F for a longer period than 72 hours without permission from the Captain of the Port. Vessels expecting to be at anchor for more than 72 hours must obtain permission from the Captain of the Port.

(444) (4) Anchorage G. (i) Except for a naval vessel, a vessel may not anchor in Anchorage G without the permission of the Captain of the Port.

(445) (ii) When handling or transferring Class 1 (explosive) materials in Anchorage G, naval vessels must comply with Department of Defense Ammunition and Explosives Safety Standards, or the standards in this section, whichever are the more stringent.

(446) (iii) When barges and other vessels are berthed at the Ammunition Barge Mooring Facility, located at 36°58'34"N., 76°21'12"W., no other vessel, except a vessel that is receiving or offloading Class 1 (explosive) materials, may anchor within 1,000 yards of the Ammunition Barge Mooring Facility. Vessels transferring class 1 (explosive) materials must display by day a red flag (Bravo flag) in a prominent location and by night a fixed red light.

(447) (iv) Whenever a vessel is handling or transferring Class 1 (explosive) materials while at anchor in Anchorage G, no other vessel may anchor in Anchorage G without the permission of the Captain of the Port. The Captain of the Port must consult with the Commander, Naval Station Norfolk, before granting a vessel permission to anchor in Anchorage G.

(448) (v) A vessel located within Anchorage G may not handle or transfer Class 1 (explosive) materials within 400 yards of Norfolk Harbor Entrance Reach.

(449) (vi) A vessel may not handle or transfer Class 1 (explosive) materials within 850 yards of another anchored vessel, unless the other vessel is also handling or transferring Class 1 (explosive) materials.

(450) (vii) A vessel may not handle or transfer Class 1 (explosive) materials within 850 yards of Anchorage F or H.

(451) (5) Anchorage I: Anchorage Berths I–1 and I–2. A vessel that is 500 feet or less in length or that has a draft of 30 feet or less may not anchor in Anchorage Berth I–1 or I–2 without the permission of the Captain of the Port.

(452) (6) Anchorage K: Anchorage Berths K–1 and K–2. A vessel that is 500 feet or less in length or that has a draft of 30 feet or less may not anchor in Anchorage Berth K–1 or K–2 without the permission of the Captain of the Port.

(453) (7) Anchorage N. Portions of this anchorage are a special anchorage area under §110.72aa of this part during marine events regulated under Sec. 100.501 of this chapter.

(454) (8) Anchorage O. (i) A vessel may not anchor in Anchorage O unless it is a recreational vessel.

(455) (ii) No float, raft, lighter, houseboat, or other craft may be laid up for any reason in Anchorage O without the permission of the Captain of the Port.

(456) (9) Anchorage Q: Quarantine Anchorage. (i) A vessel that is arriving from or departing for sea and that requires an examination by public health, customs, or immigration authorities shall anchor in Anchorage Q. Vessels not needing examination may use Anchorage Q at any time.

(457) (ii) Every vessel using Anchorage Q must be prepared to move promptly under its own power to another location when directed by the Captain of the Port, and must promptly vacate Anchorage Q after being examined and released by authorities.

(458) (iii) Any non-self-propelled vessel using Anchorage Q must have a tugboat in attendance while undergoing examination by quarantine, customs, or immigration authorities, except with the permission of the Captain of the Port.

Part 117–Drawbridge Operation Regulations

Subpart A–General Requirements

§117.1 Purpose.

(459) (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.

(460) (b) Subpart A contains the general operation requirements that apply to all drawbridges.

(461) (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.

(462) The following definitions apply to this part:

(463) 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.

(464) 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.

(465) Deviation means a District Commander's action authorizing a drawbridge owner to temporarily not comply with the drawbridge opening requirements in this part.

(466) Drawbridge means a bridge with an operational span that is intended to be opened for the passage of waterway traffic.

(467) Drawspan means the operational span of a drawbridge.

(468) 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.

(469) Nonstructural means that the item is not rigidly fixed to the vessel and can be relocated or altered.

(470) 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.

(471) 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.

(472) Remotely operated drawbridge means a drawbridge that is operated by remote control from a location away from the drawbridge.

(473) 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.

(474) Untended means that there is no drawtender at the drawbridge.

§117.5 When the drawbridge must open.

(475) 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.

(476) 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:

(477) (a) Provide the necessary drawtender(s) for the safe and prompt opening of the drawbridge.

(478) (b) Maintain the working machinery of the drawbridge in good operating condition.

(479) (c) Cycle the drawspan(s) periodically to ensure operation of the drawbridge.

(480) (d) Ensure that the drawbridge operates in accordance with the requirements of this part.

(481) (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.

(482) (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.

(483) (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.

(484) (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.

(485) No person shall unreasonably delay the opening of a draw after the signals required by §117.15 have been given.

(486) **Note**.–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.

(487) No vessel owner or operator shall–

(488) (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

(489) (b) Signal a drawbridge to open for any purpose other than to pass through the drawbridge opening.

§117.15 Signals.

(490) (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.

(491) (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.

(492) (3) Any of the means of signaling described in this subpart sufficient to alert the party being signaled may be used.

(493) (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.

(494) (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.

(495) (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.

(496) (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.

(497) (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.

(498) (c) Visual signals. (1) The visual signal to request the opening of a draw is–

(499) (i) A white flag raised and lowered vertically; or

(500) (ii) A white, amber, or green light raised and lowered vertically.

(501) (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–

(502) (i) A white flag raised and lowered vertically;

(503) (ii) A white, amber, or green light raised and lowered vertically, or

(504) (iii) A fixed or flashing white, amber, or green light or lights.

(505) (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–

(506) (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

(507) (ii) A fixed flashing red light or lights given not more than 30 seconds after the vessel's opening signal.

(508) (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.

(509) (d) Radiotelephone communications. (1) Radiotelephones may be used to communicate the same information provided by sound and visual signals.

(510) (2) The vessel and the drawtender shall monitor the frequency used until the vessel has cleared the draw.

(511) (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.

(512) 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 Signaling when two or more vessels are approaching a drawbridge.

(513) 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.

(514) 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.

(515) (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.

(516) (b) The District Commander gives written notice of the proposed requirement to the bridge owner.

(517) (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.

(518) (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.

(519) (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.

(520) (b) The sign shall give notice of the radiotelephone and its calling and working channels–

(521) (1) In plain language; or

(522) (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.

(523) **Note.–**It is recommended that the radio-telephone sign be similar in design to the Service Signs established by the Federal Highway Administration (FHWA) in U.S. Road Symbol Signs using Reflective Blue and Reflective White colors. Color and design information is available from the District Commander of the Coast Guard District in which the bridge is located.

§117.31 Drawbridge operations for emergency vehicles and emergency vessels.

(524) (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.

(525) (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:

(526) (1) Federal, State, and local government vessels used for public safety;

(527) (2) Vessels in distress where a delay would endanger life or property;

(528) (3) Commercial vessels engaged in rescue or emergency salvage operations; and

(529) (4) Vessels seeking shelter from severe weather.

§117.33 Closure of draw for natural disasters or civil disorders.

(530) 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.

(531) (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**.

(532) (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.

(533) (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.

(534) (2) The request must describe the reason for the closure and the dates and times scheduled for the start and end of the change.

(535) (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.

(536) (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.

(537) (e) The drawbridge must return to its regular operating schedule immediately at the end of the designated time period.

(538) (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.

(539) (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.

(540) (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.

(541) (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.

(542) (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.

(543) (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.

(544) (b) The District Commander may:

(545) (1) Authorize the closure of the drawbridge;

(546) (2) Set out any conditions in addition to the requirement in paragraph (d): and

(547) (3) Revoke an authorization and order the drawbridge returned to operation when necessary.

(548) (c) All drawbridges authorized to remain closed to navigation, under this section, must be maintained in operable condition.

(549) (d) Authorization under this section does not:

(550) (1) Authorize physical changes to the drawbridge structure, or

(551) (2) Authorize removal of the operating machinery.

(552) (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.

(553) (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.

(554) (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.

(555) (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.

(556) (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:

(557) (1) Special operating requirements are established in subpart B of this part for that drawbridge; or

(558) (2) The drawbridge is remotely operated or automated.

§117.42 Remotely operated and automated drawbridges.

(559) (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.

(560) (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.

(561) (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.

(562) (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).

(563) **Note.**–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.

(564) (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.

(565) (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.

(566) 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.

(567) (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.

(568) (b) The signs shall be of sufficient size and so located as to be easily read at any time from an approaching vessel.

(569) (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.

(570) 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.

DELAWARE

§117.231 Brandywine Creek.

(571) The draw of the Conrail bridge, mile 1.1, the Church Street bridge, mile 1.3, and the Sixteenth Street bridge, mile 1.7, all at Wilmington, need not be opened for the passage of vessels.

§117.233 Broad Creek.

(572) (a) The draw of the Conrail Bridge, mile 8.0 at Laurel, shall open on signal if at least four hours notice is given.

(573) (b) The draws of the Poplar Street Bridge, mile 8.2, and the U.S. 13A Bridge, mile 8.2, all at Laurel, shall open on signal if at least 48 hours notice is given.

§117.234 Cedar Creek.

(574) The SR 36 Bridge, mile 0.5 in Cedar Beach, shall open on signal. From April 1 through November 30 from 2 a.m. to 4 a.m.; and from December 1 through March 31 from 6:30 p.m. to 6 a.m., the draw shall open on signal if at least four hours notice is given.

§117.235 Chesapeake and Delaware Canal.

(575) The draw of the Conrail bridge, mile 7.7, shall open on signal. The following light signals, located in the center of the drawspan on both sides of the bridge, shall be used:

(576) (a) When the draw is to be opened immediately, one fixed amber light.

(577) (b) When the draw is not ready to be opened, one flashing red light.

§117.237 Christina River.

(578) (a) The owners of the bridges on this waterway:

(579) (1) Shall provide and keep in good legible condition two board gages painted white with black figures not less than six inches high, to indicate the vertical clearance under the closed draw at all stages of the tide. The gages shall be so placed on the bridges that they are plainly visible to the operator of each vessel approaching the bridges either up or downstream.

(580) (2) Shall open on signal except that the draw of a railroad bridge need not be opened when a train is in the bridge block, approaching the bridge, or within 5 minutes of the passage of a passenger train; but in no event shall the opening of the draw be delayed more than 10 minutes.

(581) (b) The draw of the Norfolk Southern Railroad Bridge, mile 1.4 at Wilmington, shall operate as follows:

(582) (1) The draw shall remain in the open position for navigation. The draw shall only be closed for train crossings or periodic maintenance authorized in accordance with subpart A of this part.

(583) (2) The bridge shall be operated by the controller at the Harrisburg, PA Dispatcher's Office. The controller shall monitor vessel traffic with closed circuit cameras

and infrared sensors covering the swing radius. Operational information will be provided 24 hours a day on marine channel 13 and via telephone 717–541–2140.

(584) (3) The bridge shall not be operated from the remote location in the following events: Failure or obstruction of the infrared sensors, closed-circuit cameras or marine-radio communications, or anytime controller's visibility is inhibited. In these situations, a bridge tender with Norfolk Southern must be called and on-site within 30 minutes.

(585) (4) Before the bridge closes for any reason, the remote operator will monitor waterway traffic in the area. The bridge shall 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. While the bridge is moving, the operator shall maintain constant surveillance of the navigation channel.

(586) (5) Before closing the draw, the channel traffic lights would change from flashing green to flashing red, the horn will sound five short blasts, and an audio voice warning stating, "Attention, Attention. Norfolk Southern Railroad Bridge over Christina River at milepost 1.4 will be closing to river traffic." Five short blasts of the horn will continue until the bridge is seated and locked down to vessels. The channel traffic lights will continue to flash red.

(587) (6) When the rail traffic has cleared, the horn will sound one prolonged blast followed by one short blast to indicate the draw is opening to vessel traffic. During the opening swing movement, the channel traffic lights would flash red until the bridge returns to the fully open position. In the full open position to vessels, the bridge channel lights will flash green followed by an announcement stating, "Security, security, security. Norfolk Southern Railroad Bridge over Christina River at mile 1.4 is open for river traffic." Vessels shall stay clear of both channels as to not interfere with infrared detectors, until green lights are displayed on the swing span.

(588) (c) The draws of the Conrail bridges, at miles 4.1 and 4.2, both at Wilmington, shall open on signal from 6 a.m. to 8 p.m. if at least 24 hours notice is given. From 8 p.m. to 6 a.m., the draws need not be opened for the passage of vessels.

(589) (d) The draws of the Norfolk Southern Railroad bridges, at miles 4.1 and 4.2, both at Wilmington, shall open on signal from 6 a.m. to 8 p.m. if at least 24 hours notice is given. From 8 p.m. to 6 a.m., the draws need not be opened for the passage of vessels.

§117.239 Lewes and Rehoboth Canal.

(590) (a) The draw of the Savannah Road/SR 18 Bridge, at mile 1.7, in Lewes shall open on signal if at least four hours notice is given.

(591) (b) The draw of the SR 14A Bridge, at mile 6.7, in Rehoboth shall open on signal if at least 24 hours notice is given.

§117.241 Mispillion River.

(592) The draw of the Route 1/Rehoboth Blvd. Bridge, at mile 11.0, at Milford shall open on signal if at least 24 hours notice is given.

§117.243 Nanticoke River.

(593) (a) The draw of the Norfolk Southern Railway Bridge, mile 39.4 in Seaford, will operate as follows:

(594) (1) From March 15 through November 15, the draw will open on signal for all vessels except that from 11 p.m. to 5 a.m. at least 2.5 hours notice will be required.

(595) (2) At all times, from November 16 through March 14, the draw will open on signal if at least 2.5 hours notice is given.

(596) (3) When notice is required, the owner operator of the vessel must provide the train dispatcher with an estimated time of passage by calling 717–215–0379 or 609–412–4338.

(597) (b) The draw of the SR 13 Bridge, mile 39.6 in Seaford, shall open on signal, except from 6 p.m. to 8 a.m., from April 1 through October 31; from November 1 through March 31, Monday to Friday, and on Saturday and Sunday from 3:30 p.m. to 7:30 a.m., if at least four hours notice is given.

DISTRICT OF COLUMBIA

§117.253 Anacostia River.

(598) (a) The draw of the Frederick Douglass Memorial (South Capitol Street) bridge, mile 1.2, shall open on signal if at least 24 hours notice is given. The draw is closed to the passage of vessels on each Presidential Inauguration Day and may occasionally be closed without advance notice to permit uninterrupted transit of dignitaries across the bridge.

(599) (b) The CSX Railroad Bridge, mile 3.4.

(600) (1) The draw of the bridge to be operated by the controller at the Benning Yard office shall open on signal;

(601) (i) At all times for public vessels of the United States, state and local government vessels, commercial vessels and any vessels in an emergency involving danger to life or property.

(602) (ii) Between 9 a.m. and 12 p.m. and between 1 p.m. and 6 p.m. from May 15 through September 30.

(603) (iii) Between 6 p.m. and 7 p.m. from May 15 through September 30 if notice is given to the controller at the Benning Yard office not later than 6 p.m. on the day for which the opening is requested.

(604) (iv) At all other times, if at least 48 hours of notice is given to the controller at the Benning Yard office.

(605) (2) The CSX Railroad Bridge shall not be operated by the controller at the Benning Yard office 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.

(606) (3) Except as provided in §117.31(b), opening of the draw shall not exceed ten minutes after clearance of rail traffic.

(607) (4) A horn will sound one prolonged blast followed by one short blast to indicate that the CSX Railroad Bridge is moving to the full open position for vessel traffic. 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.

(608) (5) A horn will sound five short blasts, the channel traffic lights will flash red, and an audio voice-warning device will announce bridge movement during closing span movement. Five short blasts of the horn will continue until the bridge is seated in and locked down. When the bridge is seated and in locked down position to vessels, the channel traffic lights will continue to flash red.

(609) (6) The owners of the bridge shall provide and keep in good legible condition two board gauges painted white with black figures not less than six inches high to indicate the vertical clearance under the closed draw at all stages of the tide. The gauges shall be placed on the bridge so that they are plainly visible to the operator of any vessel approaching the bridge from either upstream or downstream.

§117.255 Potomac River.

(610) (a) The draw of the Woodrow Wilson Memorial (I–95) bridge, mile 103.8, between Alexandria, Virginia, and Oxon Hill, Maryland–

(611) (1) Shall open on signal at any time only for a vessel in distress, notwithstanding the provisions of §117.31:

(612) (2) Shall open for the passage of a commercial vessel at any time except:

(613) (i) From Monday through Friday (except Federal holidays), 5 a.m. to 8 p.m.

(614) (ii) Saturday, Sunday, and Federal holidays, 2 p.m. to 7 p.m.

(615) (3) Need not open for the passage of a commercial vessel under paragraph (a)(2) of this section unless–

(616) (i) The owner or operator of the vessel provides the bridge tender with an estimate of the approximate time of that passage at least 12 hours in advance at 703–836–2396; and

(617) (ii) The owner or operator of the vessel notifies the bridge tender at least 4 hours in advance of the requested time for that passage.

(618) (4) Shall open for the passage of a recreational vessel at any time except:

(619) (i) Monday through Friday (except Federal holidays), 5 a.m. to 12 midnight;

(620) (ii) Saturday, Sunday, and Federal holidays, 7 a.m. to 12 midnight, except as provided in paragraph (a)(4)(iii) of this section;

(621) (iii) Notwithstanding paragraph (a)(4)(ii) of this section, the bridge may open beginning at 10 p.m. on Saturday, Sunday, or a Federal holiday for the passage of a recreational vessel if the owner or operator of the vessel notifies the Bridge Tender of the time of that passage by not later than 12 hours before that time.

(622) (5) Need not open for the passage of a recreational vessel under paragraph (a)(4) of this section unless–

(623) (i) The owner or operator of the vessel provides the bridge tender with an estimate of the approximate time of the passage at least 12 hours in advance at 703–736–2396; and

(624) (ii) the owner or operator of the vessel notifies the bridge tender at least 4 hours in advance of the requested time for that passage.

(625) (6) A recreational vessel may pass through the drawspan at any time it is open for passage of a commercial vessel.

(626) (b) The draws of all other bridges need not be opened for the passage of vessels.

(627) (c) This section is also issued under the authority of Pub. L. 102–587, 106 Stat. 5039.

MARYLAND

§117.543 Bear Creek.

(630) (a) The draw of the Peninsula Parkway Bridge, mile 2.1, between Dundalk and Sparrows Point, shall open on signal; except that, from April 16 through November 15 from 12 midnight to 8 a.m. except Saturdays and Sundays, and Federal and State holidays, at least one half hour notice is required.

(631) (b) The draw of the Baltimore County highway bridge, mile 3.4 at Wise Avenue between Dundalk and Sparrows Point, shall open on signal if at least four hours notice is given.

§117.547 Bush River.

(632) The draw of the Amtrak bridge, mile 6.8 at Perryman, operates as follows:

(633) (a) When notice under paragraph (b) of this section is given, the draw shall open twice a day –

(634) (1) From May 1 through September 30, on each Saturday, Sunday, and Federal holiday falling on a Friday or a Monday; and

(635) (2) In October, on the Saturday and Sunday of one weekend.

(636) (b) Notice of the need for an opening is given to the Amtrak Assistant Transportation Superintendent at 301–291–4278 by an authorized representative of the Bush River Yacht Club by noon on the Friday just preceding the day of opening or, if that Friday is a Federal holiday, by noon on the preceding Thursday.

(637) (c) Amtrak determines the times for openings and shall schedule the times–

(638) (1) During daylight hours;

(639) (2) Six to ten hours apart; and

(640) (3) One opening before noon and one after noon.

(641) (d) Amtrak shall notify a representative of the Yacht Club of the times of all openings for the weekend (or extended weekend) in question by 6 p.m. on the Friday

just preceding the weekend or, if that Friday is a Federal holiday, by 6 p.m. on the preceding Thursday.

(642) (e) Each opening shall be of sufficient duration to pass waiting vessels.

§117.549 Cambridge Harbor.

(643) The draw of the S342 bridge, mile 0.1 at Cambridge, shall open on signal from 6 a.m. to 8 p.m.; except that, from 12 noon to 1 p.m. Monday through Friday, the draw need not be opened. The draw need not be opened from 8 p.m. to 6 a.m.

§117.551 Chester River.

(644) The draw of the S213 Bridge, mile 26.8 at Chestertown, shall open on signal if at least six hours notice is given.

§117.553 Choptank River.

(645) (a) The draw of the Maryland 331 bridge, mile 35.3, at Dover, shall open on signal from 6 a.m. to 6 p.m. year-round, and the draw shall remain closed from 6 p.m. to 6 a.m., year-round, unless 24 hours advance notice is given by calling 301–820–8592 or 301–745–2096.

(646) (b) The draw of the Conrail bridge, mile 50.9 at Denton, shall open on signal from May 30 through September 30 from sunrise to sunset and at all other times if at least four hours notice is given.

§117.555 College Creek.

(647) The draws of the Naval Academy highway bridge, mile 0.3 at Annapolis, and the Maryland highway bridge, mile 0.4 at Annapolis, need not be opened for the passage of vessels.

§117.557 Curtis Creek.

(648) The draw of the I695 bridge, mile 1.0 at Baltimore, shall open on signal if at least a one-hour notice is given to the Maryland Transportation Authority in Baltimore.

§117.559 Isle of Wight (Sinepuxent) Bay.

(649) The draw of the US 50 Bridge, mile 0.5, at Ocean City, shall open on signal, except:

(650) (a) From October 1 through April 30, from 6 p.m. to 6 a.m., the draw shall open if notice has been given to the bridge tender before 6 p.m.

(651) (b) From May 25 through September 15, from 9:25 a.m. to 9:55 p.m., the draw shall open at 25 minutes after and 55 minutes after the hour for a maximum of five minutes to let accumulated vessels pass, except that on Saturdays, from 1 p.m. to 5 p.m., the draw shall open on the hour for all waiting vessels and shall remain in the open position until all waiting vessels pass.

(651.01) (c) On July 4, the draw need not open from 9:30 p.m. until 10:30 p.m. to accommodate the annual July 4th fireworks show. Should inclement weather prevent the fireworks event from taking place as planned, the draw need not open from 9:30 p.m. until 10:30 p.m. on July 5th to accommodate the annual July 4th fireworks show.

§117.561 Kent Island Narrows.

(652) The draw of the U.S. Route 50/301 bridge, mile 1.0, Kent Island Narrows, operates as follows:

(653) (a) From November 1 through April 30, the draw shall open on signal from 6 a.m. to 6 p.m. but need not be opened from 6 p.m. to 6 a.m.

(654) (b) From May 1 through October 31, the draw shall open on signal on the hour and half-hour from 6 a.m. to 9 p.m., but need not be opened from 9 p.m. to 6 a.m.

(655) (c) The draw shall open on signal for public vessels of the United States, state and local government vessels used for public safety purposes, and vessels in distress. Operational information will be available 24 hours a day by calling 800–543–2515

§117.563 Marshyhope Creek.

(656) The draw of the S14 bridge, mile 5.8 at Brookview, need not be opened for the passage of vessels. The operating machinery shall be maintained in a serviceable condition.

§117.565 Miles River.

(657) The draw of the Route S370 bridge, mile 10.0 at Easton, Maryland, shall open on signal; except that from November 1 through March 31, 24 hours a day, and from April 1 through October 31, from 6 p.m. to 6 a.m., a six-hour advance notice to the drawtender is required for bridge openings.

§117.566 Patapsco River—Middle Branch.

(657.01) (a) The draw of the Hanover Street S2 bridge, mile 12.0 across the Middle Branch of the Patapsco River at Baltimore, will open on signal from 5 a.m. to 6:30 a.m., 9:30 a.m. to 4 p.m., and 6 p.m. to 9:00 p.m. The draw need not be opened from 6:30 a.m. to 9:30 a.m. and 4 p.m. to 6 p.m.; however, fire boats, police boats, and other vessels engaged in emergency operations will be passed immediately during this period. When a vessel desires to pass the draw from 9 p.m. to 5 a.m., notice will be given to the superintendent of the bridge, either at the bridge before 9 p.m. or at the superintendent's residence after 9 p.m. If the notice is given from 5 a.m. to 9 p.m. or if at least one half hour has elapsed since the notice was given, the draw will open promptly at the time requested.

(657.02) (b) The draw of the Western Maryland railroad bridge, mile 12.5 across the Middle Branch of the Patapsco River at Baltimore, shall open on signal from 7 a.m. to 12 noon and 1 p.m. to 4 p.m. Monday through Friday except legal holidays. At all other times, the draw shall open if at least six hours notice is given. Marine fire-fighting equipment and pollution control vessels shall be passed as soon as possible but in no event more than 15 minutes after notice is given.

§117.567 Patuxent River.

(658) The draw of S231 bridge, mile 18.5 at Benedict, shall open on signal; except that, from 6 p.m. to 6 a.m., the draw shall open on signal if notice is given to the Toll Captain at the Administration Building at the east end of the bridge before 6 p.m.

§117.569 Pocomoke River.

(659) (a) The SRNJ railroad bridge, mile 15.2, at Pocomoke City, shall open on signal, except between November 1 and March 31 the draw must open only if at least five hours advance notice is given.

(660) (b) The draw of the Route 675 bridge, mile 15.6, at Pocomoke City, shall open on signal, except between November 1 and March 31 the draw must open only if at least five hours advance notice is given.

(661) (c) The draw of the S12 bridge, mile 29.9, at Snow Hill, shall open on signal if at least five hours notice is given.

§117.570 Sassafras River.

(662) The draw of the Sassafras River (Route 213) bridge, mile 10.0 at Georgetown, Maryland, shall open on signal; except that from November 1 through March 31, from midnight to 8 a.m., the draw need only open if at least a six-hour advance notice is given.

§117.571 Spa Creek.

(663) The S181 bridge, mile 0.4, at Annapolis, Maryland:

(664) (a) From May 1 to October 31, Monday through Friday, except Federal and State holidays:

(665) (1) The draw shall remain closed from 7:30 a.m. to 9:00 a.m. and from 4:30 p.m. to 7:30 p.m., except the draw shall open at 6:00 p.m. and 7:00 p.m. for any vessels waiting to pass.

(666) (2) The draw shall open on the hour and the half-hour, from 9:00 a.m. to 4:30 p.m.

(667) (3) The draw shall open on the hour and half hour, from 7:30 p.m. to 7:30 a.m.

(668) (b) From November 1 to April 30, Monday through Friday, except Federal and State holidays:

(669) (1) The draw shall remain closed from 7:30 a.m. to 9:00 a.m. and from 4:30 p.m. to 6:00 p.m.

(670) (2) The draw shall open on signal from 9:00 a.m. to 4:30 p.m. and from 6:00 p.m. to 7:30 a.m.

(671) (c) On Saturdays, Sundays, and holidays year-round, the draw shall open on the hour and half-hour for vessels waiting to pass. Except on July 4th of every year from 8:30 p.m. to 11 p.m., the draw need not open for vessels, and in the event of inclement weather, the alternate date is July 5th.

(672) (d) The drawspan must always open on signal for public vessels of the United States.

§117.573 Stoney Creek.

(673) The draw of the Stoney Creek (S173) bridge, mile 0.9, in Riviera shall open on signal, except:

(674) (a) From 6:30 a.m. to 9 a.m. and from 3:30 p.m. to 6:30 p.m., Monday through Friday except Federal and State holidays, the draw need be opened only at 7:30 a.m. and 5 p.m. if any vessels are waiting to pass.

(675) (b) From 11 a.m. to 7 p.m. on Saturday and from 12 p.m. to 5 p.m. on Sunday, the draw need be opened only on the hour and half hour.

(676) (c) Public vessels of the United States must be passed as soon as possible.

§117.575 Susquehanna River.

(677) The draw of the Conrail bridge, mile 1.0 at Havre de Grace, shall open on signal if at least 24 hours notice is given.

§117.577 Weems Creek.

(678) The draw of the S437 bridge, mile 0.7 at West Annapolis, shall open on signal from sunrise to sunset from May 1 through September 30. At all other times, the draw shall open on signal if at least five hours notice is given.

§117.579 Wicomico River (North Prong).

(679) The draws of the Main Street and U.S. 50 bridges, mile 22.4, Salisbury, Maryland shall open on signal if at least four hours notice is given by calling the telephone contact number at 410–430–7461.

NEW JERSEY

§117.701 Alloway Creek.

(680) (a) The draws of the Salem County bridges, miles 5.1 at Hancocks Bridge, and 6.5 at New Bridge, shall open on signal if at least 24 hours notice is given.

(681) (b) The draw of the S49 bridge, mile 9.5 at Quinton, need not be opened for the passage of vessels.

§117.705 Beaver Dam Creek.

(682) The draw of the Ocean County bridge, mile 0.5 at Point Pleasant, shall open on signal from June 1 through September 30 and from 8 a.m. to 4 p.m. during April, May, October, and November. At all other times, the draw shall open on signal if at least 24 hours notice is given.

§117.711 Cohansey River.

(683) The draw of the Broad Street bridge, mile 18.2 at Bridgeton, need not be opened for the passage of vessels.

§117.713 Cooper River.

(684) (a) The drawspans for the State Street Drawbridge, mile 0.3 and the Conrail Drawbridge at North River Avenue, mile 0.9, must open on signal if at least four hours notice is given.

(685) (b) The draw of the Admiral Wilson Boulevard bridge, mile 1.1 at Camden, 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.

§117.714 Corson Inlet.

(686) The draw of the Corson Inlet Bridge, mile 0.9, at Strathmere, shall open on signal; except that from October 1 through May 15 from 10 p.m. to 6 a.m. and from 6 a.m. to 10 p.m. on December 25 the draw need open only if at least two hours notice is given.

§117.716 Delaware River.

(687) The following requirements apply at all drawbridges across the Delaware River:

(688) (a) The draws of railroad bridges need not be opened when there is a train in the bridge block approaching the bridge with the intention of crossing, or within five minutes of the known time of the passage of a scheduled passenger train.

(689) (b) The opening of a bridge may not be delayed more than five minutes for a highway bridge or 10 minutes for a railroad bridge, after the signal to open is given.

(690) (c) The owners of drawbridges shall provide and keep in good legible condition two board gages painted white with black figures not less than six inches high to indicate the vertical clearance under the closed draw at all stages of the tide. The gages shall be so placed on the bridge that they are plainly visible to operators of vessels approaching the bridge either up or downstream.

§117.719 Glimmer Glass (Debbie's Creek).

(690.01) (a) The draw of the Monmouth County highway bridge, mile 0.4 at Manasquan, shall open on signal, except as follows:

(690.02) (1) From 4:30 p.m. January 1 through 8 a.m. April 1, from 4:30 p.m. to 8 a.m., the draw need open only if at least four-hours advance notice is given.

(690.03) (2) From Memorial Day through Labor Day from 7 a.m. to 8 p.m., the draw need open only on the hour and half hour if any vessels are waiting to pass.

(690.04) (b) The owners of the bridge shall provide and keep in good legible condition two board gauges painted white with black figures not less than eight inches high to indicate the vertical clearance under the closed draw at all stages of the tide. The gauges shall be so placed on the bridge that they are plainly visible to operators of vessels approaching the bridge either up or downstream.

§117.720 Great Channel.

(691) The draw of the County of Cape May bridge, mile 0.7, between Stone Harbor and Nummy Island, shall open on signal except that:

(692) (a) From May 15 through October 15 from 10 p.m. to 6 a.m., the draw need only open if at least four hours advance notice is given.

(693) (b) [Suspended]

(694) (c) from 9:15 a.m. to 2:30 p.m. on the fourth Sunday in March of every year, the draw need not open for vessels. If the fourth Sunday falls on a religious holiday, the draw need not open from 9:15 a.m. to 2:30 p.m. on the third Sunday of March of every year.

§117.721 Grassy Sound Channel.

(695) The draw of the Grassy Sound Channel Bridge, mile 1.0 in Middle Township, shall open on signal from 6 a.m. to 8 p.m. from May 15 through September 30. From 9:15 a.m. to 2:30 p.m. on the fourth Sunday in March of every year, the draw need not open for vessels. If the fourth Sunday falls on a religious holiday, the draw need not open from 9:15 a.m. to 2:30 p.m. on the third Sunday of March of every year. Two hours advance notice is required for all other openings by calling 609–368–4591.

§117.722 Great Egg Harbor Bay.

(696) The draw of the U.S. Route 9/Beesleys Point Bridge, mile 3.5, shall open if at least two hours' notice is given from October 1 to May 14 from 8 p.m. to 6 a.m., from May 15 to September 30 from 10 p.m. to 6 a.m., and from 8 p.m. on December 24 until and including 6 a.m. on December 26 of every year; and shall open on signal at all other times.

§117.725 Manantico Creek.

(697) The draw of the highway bridge, mile 0.5 at Millville, need not be opened for the passage of vessels.

§117.729 Mantua Creek.

(698) (a) The draw of the SRNJ Railroad Bridge, mile 1.4 at Paulsboro, shall operate as follows:

(699) (1) From March through November, 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.

(700) (i) 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).

(701) (ii) Before the bridge closes for any reason, an on-site train crewmember will observe the waterway for approaching craft, which will be allowed to pass. An on-site train crewmember will then operate the bridge by radiophone. The bridge shall only be closed if an on-site train crewmember's visual inspection shows that the channel is clear and there are no vessels transiting in the area.

(702) (iii) While the SRNJ Railroad Bridge is moving from the full open to the full closed position, an on-site train crewmember will maintain constant surveillance of the navigational channel to ensure no conflict with maritime traffic exists. In the event of failure or obstruction, the on-site train crewmember will stop the bridge and return the bridge to the open position.

(703) (iv) During closing of the span, the channel traffic lights will flash red, the horn will sound five short blasts,

and an audio voice warning device will announce bridge movement, and the bridge will close. When the bridge is seated and locked down to vessels, the channel traffic lights will continue to flash red. When the rail traffic has cleared the swing span, the horn will sound one prolonged blast followed by one short blast to signal the draw of the SRNJ Railroad Bridge is about to return to its full open position to vessels.

(704) (v) During open span movement, the channel traffic lights will flash red, the horn will sound one prolonged blast followed by one short blast, then a pause, and an audio voice warning will announce bridge movement until the bridge is in the full open position. In the full open position, the channel traffic lights will flash green.

(705) (2) From December to February, the draw may be left in the closed position and opened on signal if at least four hours notice is given by telephone at 856–231–2393.

(706) (b) The draw of the S.R. 44 bridge, mile 1.7, at Paulsboro, shall open on signal from March 1 through November 30 from 7 a.m. to 11 p.m., and shall open on signal at all other times upon four hours notice.

§117.730 Maurice River.

(707) The draw of the Cumberland County bridge, mile 12.1 at Mauricetown, need not be opened for the passage of vessels.

§117.731 Mullica River.

(708) The draws of bridges listed in this section shall open on signal, except as follows:

(709) (a) The draw of the Lower Bank bridge, mile 15.0, need not open during the following periods unless at least four hours notice is given:

(710) (1) From May 1 through November 30, from 11 p.m. to 7 a.m.

(711) (2) From December 1 through April 30, at all times.

(712) (b) The draw of the Green Bank bridge, mile 18.0, need not open unless at least four hours notice is given during the following periods:

(713) (1) April 1 through November 30, from 11 p.m. to 7 a.m.

(714) (2) December 1 through March 31, at all times.

(715) (c) The drawspan must open as soon as possible for public vessels of the United States during the periods when four hours notice is required.

§117.732 Nacote Creek.

(716) (a) The Route 9 bridge, mile 1.5, shall open on signal, except that from 11 p.m. to 7 a.m., the draw shall open if at least two hours notice is given.

(717) (b) The draw of the Atlantic County (Rte. 575) bridge, mile 3.5 at Port Republic, shall open on signal if at least eight hours notice is given.

§117.733 New Jersey Intracoastal Waterway.

(718) (a) The draw of the Route 35 Bridge, mile 1.1 across Manasquan River at Brielle, shall open on signal except as follows:

(719) (1) From May 15 through September 30:

(720) (i) On Saturdays, Sundays and Federal holidays, from 8 a.m. to 10 p.m., the draw need only open 15 minutes before the hour and 15 minutes after the hour.

(721) (ii) On Mondays to Thursdays from 4 p.m. to 7 p.m., and on Fridays, except Federal holidays from 12 p.m. to 7 p.m., the draw need only open 15 minutes before the hour and 15 minutes after the hour.

(722) (2) Year-round from 11 p.m. to 8 a.m., the draw need only open if at least four hours notice is given.

(723) (b) The draw of the County Route 528 Bridge, mile 6.3 across Barnegat Bay at Mantoloking, shall open on signal; except that from Memorial Day through Labor Day on Saturdays, Sundays and Federal holidays from 9 a.m. to 6 p.m., the draw need only open on the hour, twenty minutes after the hour, and forty minutes after the hour.

(724) (c) The draw of the S37 Bridge across Barnegat Bay, mile 14.1 at Seaside Heights, shall open on signal except as follows:

(725) (1) From December 1 through March 31, the draw need only open if at least four hours notice is given.

(726) (2) From April 1 through November 30 from 11 p.m. to 8 a.m., the draw need only open if at least four hours notice is given.

(727) (3) From Memorial Day through Labor Day from 8 a.m. to 8 p.m., the draw need only open on the hour and half hour.

(728) (d) The draw of the AMTRAK New Jersey Transit Rail Operations (NJTRO) automated railroad swing bridge across Beach Thorofare, mile 68.9 at Atlantic City shall operate as follows:

(729) (1) Open on signal from 11 p.m. to 6 a.m. From 6 a.m. to 11 p.m., the draw shall open on signal from 20 minutes to 30 minutes after each hour and remain open for all waiting vessels.

(730) (2) Opening of the draw span may be delayed for ten minutes except as provided in §117.31(b). However, if a train is moving toward the bridge and has crossed the home signal for the bridge before the signal requesting opening of the bridge is given, that train may continue across the bridge and must clear the bridge interlocks before stopping.

(731) (3) When the bridge is not tended locally and/or is operated from a remote location, sufficient closed circuit TV cameras shall be operated and maintained at the bridge site to enable the remotely located bridge/train controller to have full view of both river traffic and the bridge.

(732) (4) Radiotelephone Channel 13 (156.65 MHz) VHF–FM, shall be maintained and utilized to facilitate communication in both remote and local control locations. The bridge shall also be equipped with directional microphones and horns to receive and deliver signals to

vessels within a mile that are not equipped with radiotelephones.

(733) (5) Whenever the remote control system equipment is partially disabled or fails for any reason, the bridge shall be physically tended and operated by local control. Personnel shall be dispatched to arrive at the bridge as soon as possible, but not more that one hour after malfunction or disability of the remote system. Mechanical bypass and override capability of the remote operation system shall be provided and maintained.

(734) (6) When the draw is opening and closing, or is closed, yellow flashing lights located on the ends of the center piers shall be displayed continuously until the bridge is returned to the fully open position.

(735) (e) The draw of the Route 30 Bridge across Beach Thorofare, mile 67.2 at Atlantic City, shall open on signal but only if at least four hours of notice is given; except that:

(735.01) 1) From April 1 through October 31, from 7 a.m. to 11 p.m. the draw need only open on the hour.

(735.02) (2) On July 4, the draw need not open from 9:40 p.m. until 11:15 p.m. to accommodate the annual July 4th fireworks show. Should inclement weather prevent the fireworks event from taking place as planned, the draw need not open from 9:40 p.m. until 11:15 p.m. on July 5th to accommodate the annual July 4th fireworks show.

(735.03) (3) On the third or fourth Wednesday of August the draw will open every two hours on the hour from 10 a.m. until 4 p.m. and need not open from 4 p.m. until 8 p.m. to accommodate the annual Air Show.

(736) (f) The draw of the US40–322 (Albany Avenue) Bridge, mile 70.0 across Inside Thorofare, at Atlantic City, shall open on signal except that:

(737) (1) Year-round, from 11 p.m. to 7 a.m.; and from November 1 through March 31 from 3 p.m. to 11 p.m., the draw need only open if at least four hours notice is given;

(738) (2) From June 1 through September 30:

(739) (i) From 9 a.m. to 4 p.m. and from 6 p.m. to 9 p.m. the draw need only open on the hour and half hour; and

(740) (ii) From 4 p.m. to 6 p.m. the draw need not open.

(740.01) (3) On July 4, the draw need not open from 9:40 p.m. until 11:15 p.m. to accommodate the annual July 4th fireworks show. Should inclement weather prevent the fireworks event from taking place as planned, the draw need not open from 9:40 p.m. until 11:15 p.m. on July 5th to accommodate the annual July 4th fireworks show.

(740.02) (4) On the third or fourth Wednesday of August, the draw will open every two hours on the hour from 10 a.m. until 4 p.m. and need not open from 4 p.m. until 8 p.m. to accommodate the annual Air Show.

(741) (g) The draw of the Dorset Avenue Bridge across Inside Thorofare, mile 72.1 at Ventnor City, shall open on signal except that from June 1 through September 30, from 9:15 a.m. to 9:15 p.m., the draw need only open at 15 and 45 minutes after the hour.

(742) (h) The draw of the Route 52 (Ninth Street) Bridge, mile 80.4 across Beach Thorofare, at Ocean City, shall open on signal except that from Memorial Day through Labor Day from 8 a.m. to 8 p.m., the draw need only open on the hour and half hour.

(743) (i) The draw of the Stone Harbor Boulevard Bridge, mile 102.0 across Great Channel, at Stone Harbor, shall open on signal except that:

(744) (1) From October 1 through March 31 from 10 p.m. to 6 a.m. the draw need only open if at least eight hours notice is given.

(745) (2) From Memorial Day through Labor Day from 6 a.m. to 6 p.m. on Saturdays, Sundays and Federal holidays, the draw need open only on the hour, 20 minutes after the hour, and 20 minutes before the hour.

(746) (3) From 10 p.m. on December 24 until 6 a.m. on December 26, the draw need open only if at least two hours notice is given.

(747) (j) [Reserved]

(748) (k) The draw of Two-Mile Bridge, mile 112.2, across Middle Thorofare in Wildwood Crest, shall open on signal except:

(749) (1) From 9:15 a.m. to 10:30 a.m. on the fourth Sunday in March of every year, the draw need not open for vessels. If the fourth Sunday falls on a religious holiday, the draw need not open for vessels from 9:15 a.m. to 10:30 a.m. on the third Sunday of March of every year.

(750) (2) From 10:30 p.m. on December 24 until 10:30 p.m. on December 26, the draw need open only if at least two hours notice is given.

(751) (l) The draw of the Route 35 Bridge, mile 1.1 across Manasquan River at Brielle, shall open on signal except as follows:

(752) (1) From May 15 through September 30:

(753) (i) On Saturdays, Sundays and Federal holidays, from 8 a.m. to 10 p.m., the draw need only open 15 minutes before the hour and 15 minutes after the hour.

(754) (ii) On Mondays to Thursdays from 4 p.m. to 7 p.m. and on Fridays, except Federal holidays from 12 p.m. to 7 p.m., the draw need only open 15 minutes before the hour and 15 minutes after the hours.

(755) (2) Year-round, unless otherwise provided by paragraph (l)(3) of this section, from 11 p.m. to 8 a.m., the draw need only open if at least four hours notice is given.

(756) (3) From 8 a.m. on November 1, 2006 until 5 p.m. March 1, 2007; from 8 a.m. on November 1, 2007 until 5 p.m. March 1, 2008; and from 8 a.m. on November 1, 2008 until 5 p.m. March 1, 2009, the Route 35 Bridge, mile 1.1, at Brielle may remain in the closed position to navigation.

(757) (m) The draw of Cape May Canal Railroad Bridge across Cape May Canal, mile 115.1, at Cape May shall operate as follows:

(758) (1) The draw 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 for a train crossing a bridge tender shall be present to reopen the draw after the train has cleared the bridge.

When the draw is closed for maintenance a bridge tender shall be present to open the draw upon signal.

(759) (2) Train service generally operates as follows (please contact Cape May Seashore Lines for current train schedules):

(760) (i) Winter (generally December through March): In general, there is no train service, therefore the bridge is unmanned and placed in the full open position.

(761) (ii) Spring (generally April through May and Fall (generally September through November): Generally weekend service only: Friday through Sunday train service starts at 10 a.m. and ends at 7:30 p.m. Monday thru Thursday the bridge generally unmanned and in the open position.

(762) (iii) Summer Service (generally June through August): Daily train service starting at 10 a.m. and ending 7:30 p.m.

(763) (3) When a vessel approaches the 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. When the draw is open and will be closing promptly, the drawbridge will generally signal using sound signals or radio telephone.

(764) (4) Opening of the draw span may be delayed for ten minutes after a signal to open except as provide in (117.31(b). However, if a train is moving toward the bridge and has crossed the home signal for the bridge before the signal requesting opening of the bridge is given, the train may continue across the bridge and must clear the bridge interlocks as soon possible in order to prevent unnecessary delays in the opening of the draw.

§117.737 Oldmans Creek.

(765) The draws of the US30 bridge, mile 3.1 at Nortonville, the SRNJ railroad bridge, mile 4.0 at Jumbo, and the Salem County bridge, mile 5.1 at Pedricktown, need not be opened for the passage of vessels. However, the draws of any of these bridges shall be restored to operable condition within six months after notification by the District Commander to do so.

§117.741 Raccoon Creek.

(766) (a) The draw of the Route 130 highway bridge, mile 1.8 at Bridgeport, shall open on signal:

(767) (1) March 1 through November 30, from 7 a.m. to 11 p.m.

(768) (2) At all other times, if at least four hours notice is given.

(769) (b) The draw of the SRNJ Railroad Bridge, mile 2.0 at Bridgeport, shall operate as follows:

(770) (1) From March 1 through November 30, the draw shall be left in the open position at all times and will only be closed for the passage of trains and to perform periodic maintenance authorized in accordance with subpart A of this part.

(771) (i) 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).

(772) (ii) Before the bridge closes for any reason, a train crewmember will observe the waterway for approaching craft, which will be allowed to pass. A train crewmember will then operate the bridge by radiophone. The bridge shall only be closed if a train crewmember's visual inspection shows that the channel is clear and there are no vessels transiting in the area.

(773) (iii) While the SRNJ Railroad Bridge is moving from the full open to the full closed position, a train crewmember will maintain constant surveillance of the navigational channel to ensure no conflict with maritime traffic exists. In the event of failure or obstruction, the train crewmember will stop the bridge and return the bridge to the open position.

(774) (iv) The SRNJ Railroad channel traffic lights will change from flashing green to flashing red anytime the bridge is not in the full open position.

(775) (v) During closing of the span, the channel traffic lights will change from flashing green to flashing red, the horn will sound four times, followed by a pause, then the four blasts will be repeated and the bridge will close. When the rail traffic has cleared the swing span, the horn will automatically sound five times to signal the draw of the SRNJ Railroad Bridge is about to return to its full open position.

(776) (vi) During open span movement, the channel traffic lights will be flashing red, the horn will sound four times, followed by a pause, then four blasts will be repeated until the bridge is in the full open position. In the full open position, the channel traffic lights will then turn from flashing red to flashing green.

(777) (2) At all other times, the draw may be left in the closed position and opened on signal if at least four hours notice is given by telephone at 856–231–2393.

§117.745 Rancocas Creek.

(778) (a) The following requirements apply to all bridges across the Rancocas River (Creek):

(779) (1) Public vessels of the United States must be passed through the drawspan of each drawbridge as soon as possible without delay at anytime. The opening signal from these vessels is four or more short blasts of a whistle or horn, or a radio request.

(780) (2) The owners of these bridges shall provide and keep in good legible condition clearance gauges for each draw with figures not less than 12 inches high designed, installed and maintained according to the provisions of §118.160 of this chapter.

(781) (3) Trains and locomotives shall be controlled so that any delay in opening the draw span shall not exceed ten minutes. However, if a train moving toward the bridge has crossed the home signal for the bridge before the signal requesting opening of the bridge is given, that train may continue across the bridge and must clear the bridge interlocks before stopping or reversing.

(782) (b) The drawspans for the Riverside-Delanco/SR #543 Drawbridge, mile 1.3 at Riverside and the SR#38 Drawbridge, mile 7.8 at Centerton, must operate as follows:

(783) (1) From April 1 through October 31 open on signal from 7 a.m. to 11 p.m.

(784) (2) From November 1 through March 31 from 7 a.m. to 11 p.m., open on signal if at least 24 hours notice is given, except as provided in paragraph (a)(1) of this section.

(785) (3) Year round from 11 p.m. to 7 a.m. need not open for the passage of vessels, except as provided in paragraph (a)(1) of this section.

§117.749 Salem River.

(786) The draw of the S49 bridge, mile 3.5 at Salem, shall open on signal if at least 24 hours notice is given.

§117.751 Shark River (South Channel).

(787) The draws of S71 bridge, mile 0.8, the railroad bridge, mile 0.9, and the S35 bridge, mile 0.9, all at Avon, operate as follows:

(788) (a) The bridges operate as one unit. The owners shall provide signal systems so connected that the operator of any of the bridges may simultaneously notify the operators of the other two. The operator of the first bridge to be passed shall be responsible for observing the approach of vessels, for receiving and acknowledging signals, and for coordinating the opening of the other draws.

(789) (b) The draws shall open on signal; except that, from May 15 through September 30 from 4 p.m. to 7 p.m. Monday through Friday except Federal holidays and from 9 a.m. to 9 p.m. Saturdays, Sundays, and holidays, the draw need be opened only on the hour and half hour if a vessel is waiting to pass.

(790) (c) The owners of the bridges shall provide and keep in good legible condition two board gages painted white with black figures not less than eight inches high to indicate the vertical clearance under the closed draw at all stages of the tide. The gages shall be so placed on the bridges that they are plainly visible to operators of vessels approaching the bridges either up or downstream.

§117.753 Ship Channel, Great Egg Harbor Bay.

(791) The draw of the S52 (Ship Channel) bridge, mile 0.5 between Somers Point and Ocean City, shall open:

(792) (a) From 11 p.m. to 7 a.m., on signal, if at least 24 hours advance notice is given.

(793) (b) From Memorial Day through Labor Day from 8 a.m. to 8 p.m., on the hour and half hour.

(794) (c) At all other times, on signal, for any vessel.

§117.757 Townsend Inlet.

(795) The draw of Townsend Inlet Bridge, mile 0.3 in Avalon, shall open on signal except:

(796) (a) From 9:15 a.m. to 2:30 p.m. on the fourth Sunday in March of every year, the draw need not open for vessels. If the fourth Sunday falls on a religious holiday, the draw need not open from 9:15 a.m. to 2:30 p.m. on the third Sunday of March of every year.

(797) (b) From 11 p.m. on December 24 until 11 p.m. on December 25, the draw need open only if at least two hours notice is given.

§117.758 Tuckahoe River.

(798) The draw of the State highway bridge, mile 8.0 at Tuckahoe, shall open on signal if at least 24 hours notice is given.

§117.759 Wading River.

(799) The draw of the Burlington County highway bridge, mile 5.0 at Wading River, shall open on signal if at least 24 hours notice is given.

PENNSYLVANIA

§117.901 Chester Creek.

(800) The draw of the Front Street bridge, mile 0.1 at Chester, shall open on signal if at least 24 hours notice is given.

§117.903 Darby Creek.

(801) (a) The draw of the SRNJ Railroad Bridge, mile 0.3, at Essington, will operate as follows:

(802) (1) The owner of this bridge on this waterway shall provide and keep in good legible condition two board gages painted white with black figures, nine inches high to indicate the vertical clearance under the closed draw at all stages of the tide. The gages shall be so placed on the bridge that they are plainly visible to operators of vessels approaching the bridge either up or downstream.

(803) (2) 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). However, if a train moving toward the bridge has crossed the home signal for the bridge before the signal requesting opening of the bridge is given, the train may continue across the bridge and must clear the bridge interlocks before stopping.

(804) (3) From April 1 through October 31, the draw shall 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.

(805) (4) The bridge will be operated by the bridge/train controller at the Delair Railroad Bridge in Delair, New Jersey.

(806) (5) Before the bridge closes for any reason, an on-site crewmember will observe the waterway for approaching craft, which will be allowed to pass. The on-site crewmember will then communicate with the off-site bridge/train controller at the Delair Railroad Bridge either by radio or telephone, requesting the off-site bridge/train controller to lower the bridge.

(807) (6) The bridge shall only be lowered from the remote site if the on-site crewmember's visual inspection shows there are no vessels in the area and the infrared channel sensors are not obstructed.

(808) (7) While the SRNJ Railroad Bridge is moving from the full open to the full closed position, the off-site bridge/train controller will maintain constant surveillance of the navigational channel using infrared sensors to ensure no conflict with maritime traffic exists. In the event of failure or obstruction of the infrared channel sensors, the off-site bridge/train controller will stop the bridge and return the bridge to the open position. In the event of loss of radio or telephone communications with the on-site crewmember, the off-site bridge/train controller will stop the bridge and the bridge will return to the open position.

(809) (8) When the draw cannot be operated from the remote site, a bridge tender must be called to operate the bridge in the traditional on-site manner.

(810) (9) The SRNJ Railroad channel traffic lights will change from flashing green to flashing red anytime the bridge is not in the full open position.

(811) (10) During downward span movement, the channel traffic lights will change from flashing green to flashing red, the horn will sound two times, followed by a pause, and then two repeat blasts until the bridge is seated and locked down.

(812) (11) When the rail traffic has cleared, the off-site bridge/train controller at the Delair Railroad Bridge will sound the horn five times to signal the draw of the SRNJ Railroad Bridge is about to return to its full open position.

(813) (12) During upward span movement, the channel traffic lights will change from flashing green to flashing red, the horn will sound two times, followed by a pause, and then sound repeat blasts until the bridge is in the full open position. In the full open position, the channel traffic lights will then turn from flashing red to flashing green.

(814) (13) From November 1 through March 31, the draw shall open on signal if at least 24 hours notice is given by telephone at 856–231–7088 or 856–662–8201. Operational information will be provided 24 hours a day by telephone at 856–231–7088 or 856–662–8201.

(815) (b) The Reading Railroad Bridge, mile 0.3, at Essington, will be left in the full open position at all times.

§117.904 Delaware River.

(816) See §117.716, Delaware River, listed under New Jersey.

§117.905 Schuylkill River.

(817) (a) The following requirements apply to all drawbridges across the Schuylkill River:

(818) (1) The draws of railroad bridges need not be opened when there is a train in the bridge block approaching the bridge with the intention of crossing, or within five minutes of the known time of the passage of a scheduled passenger train.

(819) (2) The opening of a bridge may not be delayed more than five minutes for a highway bridge or 10 minutes for a railroad bridge, after the signal to open is given.

(820) (3) The owners of drawbridges shall provide and keep in good legible condition two board gages painted white with black figures not less than six inches high to indicate the vertical clearance under the closed draw at all stages of the tide. The gages shall be so placed on the bridge that they are plainly visible to operators of vessels approaching the bridge either up or downstream.

(821) (b) The Passyunk Avenue bridge, mile 3.5 at Philadelphia, shall open on signal at all times if at least four hours notice is given. Public vessels of the United States shall be passed as soon as possible at any time.

(822) (c) The draw of the Conrail bridge, mile 5.5 at Grays Ferry Avenue, Philadelphia, shall open on signal; except that, on Saturdays and Sundays, the draw shall open on signal if at least two hours notice is given. Public vessels of the United States shall be passed as soon as possible at any time.

(823) (d) The draw of the University Avenue bridge, mile 6.2 at Philadelphia, shall open on signal at all times if at least two hours notice is given. Public vessels of the United States shall be passed as soon as possible at any time.

(824) (e) The draw of the Conrail bridge, mile 6.4 near Christian Street, Philadelphia, shall open on signal if at least two hours notice is given.

VIRGINIA

§117.995 Appomattox River.

(825) The draw of the Seaboard System Railroad bridge, mile 2.5 at Hopewell, shall open on signal if at least 24 hours notice is given to the Seaboard System Agent at Hopewell. However, a drawtender shall be in constant attendance and the draw shall open on signal upon 30 days notice, in writing, to do so from the District Commander.

§117.997 Atlantic Intracoastal Waterway, South Branch of the Elizabeth River to the Albemarle and Chesapeake Canal.

(826) (a) The draw of the Belt Line Railroad Bridge, mile 2.6, in Portsmouth and Chesapeake will operate as follows:

(827) (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.

(828) (2) The bridge will be operated by the controller at the Berkley Yard office.

(829) (3) The controller will monitor waterway traffic in the bridge and directly beneath the bridge with closed

circuit cameras mounted on top of the bridge and with surface navigational radar.

(830) (4) When the bridge closes for any reason, the controller will announce 30 minutes in advance, 15 minutes in advance, 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.

(831) (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.

(832) (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.

(833) (7) If the off-site bridge/train controller's visibility of the navigational channel is less than ¾ of a mile, the bridge shall not be operated from the remote location.

(834) (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.

(835) (9) The Belt Line mid-channel lights will change from green to red anytime the bridge is not in the full open position.

(836) (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.

(837) (11) When the bridge has returned to its full up position, the mid-channel 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.

(838) (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 draw shall open on signal.

(839) (c) [Suspended]

(840) (d) The draw of the Norfolk Southern #7 Railroad Bridge, mile 5.8 in Chesapeake, shall operate as follows:

(841) (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.

(842) (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.

(843) (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).

(844) (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.

(845) (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.

(846) (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.

(847) (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".

(848) (8) Operational information will be provided 24 hours a day on marine channel 13 and via telephone 757–924–5320.

(849) (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.

(850) (f) The draw of the Dominion Boulevard (US 17) bridge, mile 8.8 in Chesapeake:

(851) (1) Shall open on signal at any time for commercial vessels carrying liquefied flammable gas or other hazardous materials.

(852) (2) From 7 a.m. to 9 a.m. and 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.

(853) (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.

(854) (4) If any vessel is approaching the bridge and cannot reach the draw exactly on the half 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.

(855) (5) Shall open on signal at all other times.

(856) (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.

(857) (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.

(858) (i) The draw of the Centerville Turnpike (SR170) bridge across the Albemarle and Chesapeake Canal, mile 15.2, at Chesapeake:

(859) (1) Shall open on signal at any time for commercial vessels carrying liquefied flammable gas or other hazardous materials.

(860) (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:

(861) (i) Need not open for the passage of recreational or commercial vessels that do not qualify under paragraph (i)(2)(ii) of this section.

(862) (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.

(863) (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.

(864) (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.

(865) (5) Shall open on signal at all other times.

(866) (j) The draw of the Gilmerton (US13/460) Bridge, mile 5.8, in Chesapeake.

(867) (1) Shall open on signal at any time for commercial vessels carrying liquefied flammable gas or other hazardous materials.

(868) (2) From 6:30 a.m. to 9:30 a.m. and from 3:30 p.m. to 6:30 p.m., Monday through Friday, except Federal holidays:

(869) (i) Need not open for the passage of recreational or commercial vessels that do not qualify under paragraph (j)(2)(ii) of this section.

(870) (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.

(871) (3) From 9:30 a.m. to 3:30 p.m. Monday through Friday and from 6:30 a.m. to 6:30 p.m. Saturdays, Sunday and Federal Holidays, the draw need only be opened every hour on the half hour, except the draw shall open on signal for commercial vessels that qualify under paragraphs (j)(1) and (j)(2)(ii) of this section.

(872) (4) If any vessel is approaching the bridge and cannot reach the draw exactly on the half hour per paragraph (j)(3) of this section, the draw tender may delay the opening up to 10 minutes past the half hour for passage of the approaching vessel and any other vessels that are waiting to pass.

(873) (5) If the Norfolk & Southern Railroad Bridge #7, at mile 5.8, is not opened during a particular scheduled opening for the Gilmerton Bridge and vessels were delayed, the draw tender at the Gilmerton Bridge may provide a single opening for waiting vessels, once the Norfolk & Southern Railroad Bridge #7 reopens for vessels.

(874) (6) Shall open on signal at all other times.

§117.1001 Cat Point Creek.

(875) The draw of the S634 bridge, mile 0.3 at Naylors, need not be opened for the passage of vessels.

§117.1003 Chickahominy River.

(876) The draw of the highway bridge, mile 1.5 at Barrets Ferry, shall open on signal; except that, from 11 p.m. to 7 a.m., the draw shall open on signal if at least 12 hours notice is given.

§117.1005 Chincoteague Channel

(877) The draw of the SR 175 Bridge, mile 3.5, at Chincoteague shall open on demand from midnight to 6 a.m., and every one and a half hours from 6 a.m. to midnight (at 6 a.m., 7:30 a.m., 9 a.m., 10:30 a.m., 12 p.m., 1:30 p.m., 3 p.m., 4:30 p.m., 6 p.m., 7:30 p.m., 9 p.m., 10:30 p.m. and midnight); except from 7 a.m. to 5 p.m. on the last consecutive Wednesday and Thursday in July, the draw need not be opened.

§117.1007 Elizabeth River–Eastern Branch.

(878) (a) The draw of the Norfolk Southern Railroad Bridge (NS #V2.8), mile 2.7 at Norfolk, shall operate as follows:

(879) (1) The draw shall remain in the open position for navigation. The draw shall only be closed for train

crossings or periodic maintenance authorized in accordance with subpart A of this part.

(880) (2) The bridge shall be operated by the controller at the Norfolk Southern Railroad Bridge (NS #5), mile 1.1, over the Eastern Branch of the Elizabeth River in Norfolk, VA. The controller shall monitor vessel traffic with closed circuit cameras and infrared sensors covering the swing radius. Operational information will be provided 24 hours a day on marine channel 13 and via telephone 757–446–5320.

(881) (3) The bridge shall not be operated from the remote location in the following events: Failure or obstruction of the infrared sensors, closed-circuit cameras or marine-radio communications, or anytime controller's visibility is inhibited. In these situations, a bridge tender with Norfolk Southern must be called to operate the bridge on-site.

(882) (4) Before the bridge closes for any reason, the remote operator will monitor waterway traffic in the area. The bridge shall 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. While the bridge is moving, the operator shall maintain constant surveillance of the navigation channel.

(883) (5) Before closing the draw, the channel traffic lights will change from flashing green to flashing red, the horn will sound five short blasts, and an audio voice warning stating, "Attention, Attention. Norfolk Southern's Railroad Bridge over the Eastern Branch of the Elizabeth River at milepost 2.7 will be closing to river traffic." Five short blasts of the horn will continue until the bridge is seated and locked down to vessels, the channel traffic lights will continue to flash red.

(884) (6) When the rail traffic has cleared, the horn will sound one prolonged blast followed by one short blast to indicate that the draw is opening to vessel traffic. During the opening swing movement, the channel traffic lights will flash red until the bridge returns to the fully open position. In the full open position to vessels, the bridge channel lights will flash green followed by an announcement stating, "Security, security, security. Norfolk Southern Railroad Bridge at mile 2.7 is open for river traffic." Vessels shall stay clear of both channels as to not interfere with infrared detectors, until green lights are displayed on the swing span.

(885) (b) [Suspended]

(886) (c) [Suspended]

(887) (d) The draw of the Berkley Bridge, mile 0.4, at Norfolk, shall operate as follows:

(888) (1) The draw shall remain closed one hour prior to the published start of a scheduled marine event regulated under Sec. 100.501, and shall remain closed until one hour following the completion of the event unless the Patrol Commander designated under Sec. 100.501 allows the bridge to open for commercial vessel traffic.

(889) (2) The draw shall open on signal at any time for vessels carrying, in bulk, cargoes regulated by 46 CFR subchapters D or O, or Certain Dangerous Cargoes as defined in33 CFR 160.204.

(890) (3) For all other vessels, the draw shall open on signal at any time, except from 5 a.m. to 7 p.m., Monday through Friday, except Federal holidays. During these times, the draw shall:

(891) (i) Open for commercial vessels with a draft of 18 feet or more, provided at least 6 hours notice was given to the Berkley Bridge Traffic Control room at 757–494–2490.

(892) (ii) Open on signal at 9 a.m., 11 a.m., 1 p.m. and 2:30 p.m.

(893) (4) If the bridge is not opened during a particular scheduled opening per paragraph (d)(3)(ii) of this section and a vessel has made prior arrangements for a delayed opening, the draw tender may provide a single opening up to 30 minutes past that scheduled opening time for that signaling vessel, except at 2:30 p.m. The draw tender may provide a single opening up to 20 minutes past the 2:30 p.m. scheduled opening time for a signaling vessel that made prior arrangements for a delayed opening. A vessel may make prior arrangements for a delayed opening by contacting the Berkley Bridge Traffic Control room at 757–494–2490.

§117.1013 Kinsale Creek.

(894) The draw of the state highway bridge, mile 4.0, at Kinsale need not be opened for the passage of vessels.

§117.1015 Mattaponi River.

(895) The draws of the Lord Delaware (S33) bridge, mile 0.8 at West Point, and the S629 bridge, mile 28.5 at Walkerton, shall open on signal if at least 24 hours notice is given. The drawtender service for either bridge shall be increased to the degree determined to be adequate within 30 days after written notice is received from the District Commander to do so.

§117.1021 North Landing River.

(896) The draw of the S165 bridge, mile 20.2 at Chesapeake, shall open on signal; except that, from 6 a.m. to 7 p.m., the draw need be opened only on the hour and half hour for the passage of pleasure craft. Public vessels of the United States, commercial vessels, and vessels in an emergency endangering life or property shall be passed at any time.

(897) **Note:** Call signs and radio channels for drawbridges equipped with radiotelephones are included with the bridge descriptions in chapters 4 through 15.

§117.1023 Pamunkey River.

(898) The draw of the Eltham Bridge (SR33/30) mile 1.0, located at West Point, Virginia shall open on signal if at least four hours notice is given at all times.

§117.1025 York River.

(899) (a) The Coleman Memorial Bridge, mile 7.0 at Yorktown, shall open on signal; except from 5 a.m. to 8 a.m. and 3 p.m. to 7 p.m., Monday through Friday, except Federal holidays, the bridge shall remain closed to navigation.

(900) (b) The bridge shall be opened at anytime for vessels in an emergency which presents danger to life or property.

Part 157–Rules for the Protection of the Marine Environment relating to Tank Vessels carrying Oil in Bulk (in part).

For a complete description of this part see 33 CFR 157.

Subpart A–General

§157.01 Applicability.

(901) (a) Unless otherwise indicated, this part applies to each vessel that carries oil in bulk as cargo and that is:

(902) (1) Documented under the laws of the United States (a U.S. vessel); or

(903) (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).

(904) (b) This part does not apply to a vessel exempted under 46 U.S.C. 2109 or 46 U.S.C. 3702.

§157.03 Definitions.

(905) Except as otherwise stated in a subpart:

(906) Amidships means the middle of the length.

(907) Animal fat means a non-petroleum oil, fat, or grease derived from animals and not specifically identified elsewhere in this part.

(908) Ballast voyage means the voyage that a tank vessel engages in after it leaves the port of final cargo discharge.

(909) Breadth or B means the maximum molded breadth of a vessel in meters.

(910) Cargo tank length means the length from the forward bulkhead of the forward most cargo tanks, to the after bulkhead of the aftermost cargo tanks.

(911) Center tank means any tank inboard of a longitudinal bulkhead.

(912) Clean ballast means ballast which:

(913) (1) If discharged from a vessel that is stationary into clean, calm water on a clear day, would not–

(914) (i) Produce visible traces of oil on the surface of the water or on adjoining shore lines; or

(915) (ii) Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shore lines; or

(916) (2) If verified by an approved cargo monitor and control system, has an oil content that does not exceed 15 p.m.

(917) Combination carrier means a vessel designed to carry oil or solid cargoes in bulk.

(918) 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.

(919) 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.

(920) Dedicated clean ballast tank means a cargo tank that is allocated solely for the carriage of clean ballast.

(921) 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.

(922) 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.

(923) Double hull means watertight protective space that do not carry any oil and which separate the sides, bottom, forward end, and aft 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.

(924) 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.

(925) Existing vessel means any vessel that is not a new vessel.

(926) 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.

(927) Foreign trade means any trade that is not domestic trade.

(928) From the nearest land means from the baseline from which the territorial sea of the United States is established in accordance with international law.

(929) Fuel oil means any oil used as fuel for machinery in the vessel in which it is carried.

(930) Inland vessel means a vessel that is not oceangoing and that does not operate on the Great Lakes.

(931) 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.

(932) 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.

(933) Large primary structural member includes any of the following:

(934) (1) Web frames.

(935) (2) Girders.

(936) (3) Webs.

(937) (4) Main brackets.

(938) (5) Transverses.

(939) (6) Stringers.

(940) (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.

(941) 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.

(942) 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.

(943) Major conversion means a conversion of an existing vessel that:

(944) (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;

(945) (2) Changes the type of vessel;

(946) (3) Substantially prolongs the vessel's service life; or

(947) (4) Otherwise so changes the vessel that it is essentially a new vessel, as determined by the Commandant (CG–543).

(948) 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.

(949) New vessel means:

(950) (1) A U.S. vessel in domestic trade that:

(951) (i) Is constructed under a contract awarded after December 31, 1974;

(952) (ii) In the absence of a building contract, has the keel laid or is at a similar stage of construction after June 30, 1975;

(953) (iii) Is delivered after December 31, 1977; or

(954) (iv) Has undergone a major conversion for which:

(955) (A) The contract is awarded after December 31, 1974;

(956) (B) In the absence of a contract, conversion is begun after June 30, 1975; or

(957) (C) Conversion is completed after December 31, 1977; and

(958) (2) A foreign vessel or a U.S. vessel in foreign trade that;

(959) (i) Is constructed under a contract awarded after December 31, 1975;

(960) (ii) In the absence of a building contract, has the keel laid or is at a similar stage of construction after June 30, 1976;

(961) (iii) Is delivered after December 31, 1979; or

(962) (iv) Has undergone a major conversion for which:

(963) (A) The contract is awarded after December 31, 1975;

(964) (B) In the absence of a contract, conversion is begun after June 30, 1976; or

(965) (C) Conversion is completed after December 31, 1979.

(966) 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.

(967) Oceangoing has the same meaning as defined in §151.05 of this chapter.

(968) 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.

(969) 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 carbons as well as animal and vegetable oils.

(970) 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".

(971) Oil residue means–

(972) (1) Oil cargo residue; and

(973) (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.

(974) 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.

(975) 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.

(976) Oil mixture means a mixture, in any form, with any oil content. "Oily mixture" includes, but is not limited to–

(977) (1) Slops from bilges;

(978) (2) Slops from oil cargoes (such as cargo tank washings, oily waste, and oily refuse);

(979) (3) Oil residue; and

(980) (4) Oily ballast water from cargo or fuel oil tanks, including any oil cargo residue.

(981) Other non-petroleum oil means an oil of any kind that is not petroleum oil, an animal fat, or a vegetable oil.

(982) 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.

(983) Petroleum oil means petroleum in any form, including but not limited to, crude oil, fuel oil, sludge, oil residue, and refined products.

(984) 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.

(985) Product means any liquid hydrocarbon mixture in any form, except crude oil, petrochemicals, and liquefied gases.

(986) 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.

(987) Slop tank means a tank specifically designed for the collection of cargo drainings, washings, and other oily mixtures.

(988) Tank means an enclosed space that is formed by the permanent structure of a vessel, and designated for the carriage of liquid in bulk.

(989) Tank barge means a tank vessel not equipped with a means of self-propulsion.

(990) 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–

(991) (1) Is a vessel of the United States;

(992) (2) Operates on the navigable waters of the United States; or

(993) (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.

(994) Tankship means a tank vessel propelled by mechanical power or sail.

(995) 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.

(996) Wing tank means a tank that is located adjacent to the side shell plating.

Subpart B–Design, Equipment, and Installation

§157.08 Applicability of Subpart B.

(997) **NOTE:** An "oil tanker" as defined in §157.03 includes barges as well as self-propelled vessels.

(998) (a) Sections 157.10d and 157.11(g) apply to each vessel to which this part applies.

(999) (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.

(1000) (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.

(1001) (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.

(1002) (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.

(1003) (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.

(1004) (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.

(1005) (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.

(1006) (i) Section 157.09(d) does not apply to any:

(1007) (1) U.S. vessel in domestic trade that is constructed under a contract awarded before January 8, 1976;

(1008) (2) U.S. vessel in foreign trade that is constructed under a contract awarded before April 1, 1977; or

(1009) (3) Foreign vessel that is constructed under a contract awarded before April 1, 1977.

(1010) (j) Sections 157.09 and 157.10a do not apply to a new vessel that:

(1011) (1) Is constructed under a building contract awarded after June 1, 1979;

(1012) (2) In the absence of a building contract, has the keel laid or is at a similar stage of construction after January 1, 1980;

(1013) (3) Is delivered after June 1, 1982; or

(1014) (4) Has undergone a major conversion for which:

(1015) (i) The contract is awarded after June 1, 1979;

(1016) (ii) In the absence of a contract, conversion is begun after January 1, 1980; or

(1017) (iii) Conversion is completed after June 1, 1982.

(1018) (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.

(1019) (l) 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.

(1020) (m) Section 157.12 does not apply to a U.S. vessel that:

(1021) (1) Is granted an exemption under Subpart F of this part; or

(1022) (2) Is engaged solely in voyages that are:

(1023) (i) Between ports or places within the United States, its territories or possessions;

(1024) (ii) Of less than 72 hours in length; and

(1025) (iii) At all times within 50 nautical miles of the nearest land.

(1026) (n) Section 157.10d does not apply to:

(1027) (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);

(1028) (2) An oil spill response vessel;

(1029) (3) Before January 1, 2015–

(1030) (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

(1031) (ii) A delivering vessel that is offloading oil in bulk as cargo in lightering activities–

(1032) (A) Within a lightering zone established under 46 U.S.C. 3715(b)(5); and

(1033) (B) More than 60 miles from the territorial sea base line, as defined in 33 CFR 2.20.

(1034) (4) A vessel documented under 46 U.S.C., Chapter 121, that was equipped with a double hull before August 12, 1992;

(1035) (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, Chuckchi 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

(1036) (6) A vessel in the National Defense Reserve Fleet pursuant to 50 App. U.S.C. 1744.

§157.10d Double hulls on tank vessels.

(1037) (a) With the exceptions stated in §157.08(n), this section applies to a tank vessel–

(1038) (1) For which the building contract is awarded after June 30, 1990;

(1039) (2) That is delivered after December 31, 1993;

(1040) (3) That undergoes a major conversion for which;

(1041) (i) The contract is awarded after June 30, 1990; or

(1042) (ii) Conversion is completed after December 31, 1993; or

(1043) (4) That is otherwise required to have a double hull by 46 U.S.C. 3703a(c).

(1044) (b) Each vessel to which this section applies must be fitted with:

(1045) (1) A double hull in accordance with this section; and

(1046) (2) If §157.10 applies, segregated ballast tanks and a crude oil washing system in accordance with that section.

(1047) (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:

(1048) (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:

(1049) (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.).

(1050) (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.).

(1051) (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.

(1052) (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:

(1053) (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.).

(1054) (ii) For a vessel of less than 5,000 DWT: h=B/15, but in no case less than 0.76 meter (30 in.).

(1055) (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.

(1056) (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–

(1057) (i) For a vessel of 5,000 DWT and above: At levels up to 1.5h above the base line, not less than 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.

(1058) (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.

(1059) (4) For a vessel to which §157.10(b) applies that is built under a contract awarded after September 11, 1992.

(1060) (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.

(1061) (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.

(1062) (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:

(1063) (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

(1064) (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.

(1065) (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.

(1066) (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.

(1067) (e) Except as provided in paragraph (e)(3) of this section, a vessel must not carry any oil in any tank extending forward of:

(1068) (1) The collision bulkhead; or

(1069) (2) In the absence of a collision bulk-head, the transverse plane perpendicular to the centerline through a point located:

(1070) (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;

(1071) (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

(1072) (iii) On each vessel which operates exclusively as a box or trail barge, 61 cm. (2 ft.) aft of the headlog.

(1073) (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.

(1074) (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.

(1075) (a) The purpose of this subpart is to establish mandatory safety and operational requirements to reduce environmental damage resulting from petroleum oil spills.

(1076) (b) This subpart applies to each tank vessels specified in §157.01 of this part that–

(1077) (1) Is 5,000 gross tons or more;

(1078) (2) Carries petroleum oil in bulk as cargo or oil cargo residue; and

(1079) (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).

§157.455 Minimum under-keel clearance.

(1080) (a) The owner or operator of a tankship, that is not fitted with a double bottom that covers the entire cargo tank length, shall provide the tankship master with written under-keel clearance guidance that includes–

(1081) (1) Factors to consider when calculating the ship's deepest navigational draft;

(1082) (2) Factors to consider when calculating the anticipated controlling depth;

(1083) (3) Consideration of weather or environmental conditions; and

(1084) (4) Conditions which mandate when the tankship owner or operator shall be contacted prior to port entry or getting underway; if no such conditions exist, the guidance must contain a statement to that effect.

(1085) (b) Prior to entering the port or place of designation and prior to getting underway, the master of a tankship that is not fitted with the double bottom that covers the entire cargo tank length shall plan the ship's passage using guidance issued under paragraph (a) of this section and estimate the anticipated under-keel clearance. The tankship master and the pilot shall discuss the ship's planned transit including the anticipated under-keel clearance. An entry must be made in the tankship's official log or in other onboard documentation reflecting discussion of the ship's anticipated passage.

(1086) (c) The owner or operator of a tank barge, that is not fitted with a double bottom that covers the entire cargo tank length, shall not permit the barge to be towed unless the primary towing vessel master or operator has been provided with written under-keel clearance guidance that includes–

(1087) (1) Factors to consider when calculating the tank barge's deepest navigational draft;

(1088) (2) Factors to consider when calculating the anticipated controlling depth;

(1089) (3) Consideration of weather or environmental conditions; and

(1090) (4) Conditions which mandate when the tank barge owner or operator shall be contacted prior to port entry or getting underway; if no such conditions exist, the guidance must contain a statement to that effect.

Part 160–Ports and Waterways Safety–General

Subpart A–General:

§160.1 Purpose.

(1091) (a) This subchapter contains regulations implementing the Ports and Waterways Safety Act (33 U.S.C. 1221) and related statutes.

§160.3 Definitions.

(1092) For the purposes of this subchapter:

(1093) 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.

(1094) 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.

(1095) Commandant means the Commandant of the United States Coast Guard.

(1096) Deviation means any departure from any rule in this subchapter.

(1097) 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.

(1098) 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.

(1099) ETA means estimated time of arrival.

(1100) 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.

(1101) Person means an individual, firm, corporation, association, partnership, or governmental entity.

(1102) 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.

(1103) Tanker means a self-propelled tank vessel constructed or adapted primarily to carry oil or hazardous materials in bulk in the cargo spaces.

(1104) 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.

(1105) Vehicle means every type of conveyance capable of being used as a means of transportation on land.

(1106) Vessel means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.

(1107) 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.

(1108) 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.

(1109) **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.

(1110) VTS Special Area means a waterway within a VTS area in which special operating requirements apply.

§160.5 Delegations.

(1111) (a) District Commanders and Captains of the Ports are delegated the authority to establish safety zones.

(1112) (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.

(1113) (c) Under the provisions of 33 CFR §1.05–1, District Commanders have been delegated authority to establish regulated navigation areas.

(1114) (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.

(1115) (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.

(1116) (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.

(1117) (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.

(1118) (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 issued in writing and constitutes final agency action.

(1119) (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.

Subpart B–Control of Vessel and Facility Operations

§160.101 Purpose.

(1120) 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.

(1121) (a) This subpart applies to any–

(1122) (1) Vessel on the navigable waters of the United States, except as provided in paragraphs (b) and (c) of this section;

(1123) (2) Bridge or other structure on or in the navigable waters of the United States; and

(1124) (3) Land structure or shore area immediately adjacent to the navigable waters of the United States.

(1125) (b) This subpart does not apply to any vessel on the Saint Lawrence Seaway.

(1126) (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–

(1127) (1) Innocent passage through the territorial sea of the United States;

(1128) (2) Transit through the navigable waters of the United States which form a part of an international strait.

§160.105 Compliance with orders.

(1129) 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.

(1130) 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.

(1131) (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–

(1132) (1) Direct the handling, loading, unloading, storage, 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

(1133) (2) Conduct examinations to assure compliance with the safety equipment requirements for structures.

§160.111 Special orders applying to vessel operations.

(1134) Each District Commander or Captain of the Port may order a vessel to operate or anchor in the manner directed when–

(1135) (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;

(1136) (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

(1137) (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.

(1138) (a) Each District Commander or Captain of the Port may prohibit any vessel 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.

(1139) (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:

(1140) (1) Fails to comply with any applicable regulation;

(1141) (2)Discharges oil or hazardous material in violation of any law or treaty of the United States;

(1142) (3) Does not comply with applicable vessel traffic service requirements;

(1143) (4) While underway, does not have at least one deck officer on the navigation bridge who is capable of communicating in the English language.

(1144) (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.

(1145) (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.

(1146) (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 Arrivals, Hazardous Conditions, and Certain Dangerous Cargos

§160.201 General.

(1147) This subpart contains requirements and procedures for submitting Notices of Arrival (NOA) and Notice of Hazardous Condition. The sections in this subpart describe:

(1148) (a) Applicability and exemptions from requirements in this subpart;

(1149) (b) Required information in an NOA;

(1150) (c) Required changes to an NOA;

(1151) (d) Methods and times for submission of an NOA and changes to an NOA;

(1152) (e) How to obtain a waiver; and

(1153) (f) Requirements for submission of the Notice of Hazardous Conditions.

§160.202 Applicability.

(1154) (a) This subpart applies to U.S. and foreign vessels bound for or departing from ports or places in the United States.

(1155) (b) This subpart does not apply to recreational vessels under 46 U.S.C. 4301 et seq.

(1156) (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.

(1157) (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.

(1158) (a) Except for reporting notice of hazardous conditions, the following vessels are exempt from requirements in this subpart:

(1159) (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.

(1160) (2) Oil Spill Recovery Vessels (OSRVs) when engaged in actual spill response operations or during spill response exercises.

(1161) (3) Vessels operating upon the following waters:

(1162) (i) Mississippi River between its sources and mile 235, Above Head of Passes;

(1163) (ii) Tributaries emptying into the Mississippi River above mile 235;

(1164) (iii) Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway and the Red River; and

(1165) (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.

(1166) (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:

(1167) (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).

(1168) (2) Vessels operating exclusively within a Captain of the Port Zone.

(1169) (3) Vessels arriving at a port or place under force majeure.

(1170) (4) Towing vessels and barges operating solely between ports or places in the continental United States.

(1171) (5) Public vessels.

(1172) (6) Except for tank vessels, U.S. vessels operating solely between ports or places in the United States on the Great Lakes.

(1173) (c) Vessels less than 500 gross tons need not submit the International Safety Management (ISM) Code Notice (Entry (7) to Table 160.206).

(1174) (d) [Suspended]

(1175) (e) [Suspended]

(1176) (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.

(1177) As used in this subpart:

(1178) 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.

(1179) Barge means a non-self propelled vessel engaged in commerce.

(1180) 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.

(1181) Certain dangerous cargo (CDC) includes any of the following:

(1182) (1) Division 1.1 or 1.2 explosives as defined in 49 CFR 173.50.

(1183) (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.

(1184) (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.

(1185) (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.

(1186) (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.

(1187) (6) Class 7, "highway route controlled quantity" radioactive material or "fissile material, controlled shipment," as defined in 49 CFR 173.403.

(1188) (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).

(1189) (8) The following bulk liquids except when carried as CDC residue:

(1190) (i) Acetone cyanohydrin;

(1191) (ii) Allyl alcohol;

(1192) (iii) Chlorosulfonic acid;

(1193) (iv) Crotonaldehyde;

(1194) (v) Ethylene chlorohydrin;

(1195) (vi) Ethylene dibromide;

(1196) (vii) Methacrylonitrile;

(1197) (viii) Oleum (fuming sulfuric acid); and

(1198) (ix) Propylene oxice, alone or mixed with ethylene oxide.

(1199) (9) The following bulk solids:

(1200) (i) ammonium nitrate listed as Division 5.1 (oxidizing) material in 49 CFR 172.101 except when carried as CDC residue; and

(1201) (ii) Ammonium nitrate based fertilizer listed as a Division 5.1 (oxidizing) material in 49 CFR 172.101 except when carried as CDC residue.

(1202) Certain dangerous cargo residue (CDC residue) includes any of the following:

(1203) (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.

(1204) (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:

(1205) (i) Ammonia, anhydrous;

(1206) (ii) Chlorine;

(1207) (iii) Ethane;

(1208) (iv) Ethylene oxide;

(1209) (v) Methane (LNG);

(1210) (vi) Methyl bromide;

(1211) (vii) sulfur dioxide; and

(1212) (viii) vinyl chloride.

(1213) 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."

(1214) Crewmember means all persons carried on board the vessel to provide navigation and maintenance of the vessel, its machinery, systems, and arrangements

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.

essential for propulsion and safe navigation or to provide services for other persons on board.

(1215) 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.

(1216) 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.

(1217) 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.

(1218) Nationality means the state (nation) in which a person is a citizen or to which a person owes permanent allegiance.

(1219) 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.

(1220) Persons in addition to crewmembers mean any person onboard the vessel, including passengers, who are not included on the list of crewmembers.

(1221) Port or place of departure means any port or place in which a vessel is anchored or moored.

(1222) Port or place of destination means any port or place in which a vessel is bound to anchor or moor.

(1223) 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.

(1224) 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.

(1225) 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.

(1226) (a) Each NOA must contain all of the information items specified in Table 160.206.

(1227) (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.

(1228) (c) You may submit a copy of INS Form I–418 to meet the requirements of entries (4) and (5) in Table 160.206.

(1229) (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.

(1230) (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.

(1231) (b) Changes in the following information need not be reported:

(1232) (1) Changes in arrival or departure times that are less than six (6) hours;

(1233) (2) Changes in vessel location or position of the vessel at the time of reporting (entry (2)(vi) to Table 160.206); and

(1234) (3) Changes to crewmembers' position or duties on the vessel (entry (5)(v) to Table 160.206).

(1235) (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.

(1236) (a) [Suspended]

(1237) (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.

(1238) (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).

(1239) (d) [Suspended]

(1240) (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:

(1241) (1) Electronic submission via the electronic NOA (e-NOA) available on the NVMC web site at http://www.nvmc.uscg.gov.

(1242) (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;

(1243) (3) E-mail at sans@nvmc.uscg.gov. Workbook available at http://www.nvmc.uscg.gov;

(1244) (4) Fax at 800–547–8724 or 304–264–2684. Workbook available at http://www.nvmc.uscg.gov; or,

(1245) (5) Telephone at 800–708–9823 or 304–264–2502.

§160.212 When to submit an NOA.

(1246) (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.

(1247) (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.

(1248) (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.

(1249) (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.

(1250) (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.

(1251) (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.

(1252) (c) [Suspended]

§160.214 Waivers.

(1253) 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.

(1254) 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.

(1255) 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.

§162.30 Channel of Tuckerton Creek, NJ; navigation.

(1256) (a) Power boats or other vessels propelled by machinery shall not proceed at any time within the limits of these waters at a greater speed than 8 statute miles per hour.

§162.35 Channel of Christina River, DE; navigation.

(1257) (a) That vessels of over 20 tons capacity, propelled by machinery, shall not proceed at any time within the limits of these waters at a greater speed than 8 statute miles per hour.

§162.40 Inland waterway from Delaware River to Chesapeake Bay, DE and MD (Chesapeake and Delaware Canal).

(1258) These regulations are given in the description of the canal in chapter 7 of this Coast Pilot.

§162.270 Restricted areas in vicinity of Maritime Administration Reserve Fleets.

(1259) (a) The regulations in this section shall govern the use and navigation of waters in the vicinity of the following National Defense Reserve Fleets of the Maritime Administration, Department of Transportation:

(1260) (1) James River Reserve Fleet, Fort Eustis, Virginia.

(1261) (2) Beaumont Reserve Fleet, Neches River near Beaumont, Texas.

(1262) (3) Suisun Bay Reserve Fleet near Benicia, California.

(1263) (b) No vessels or other watercraft, except those owned or controlled by the United States Government, shall cruise or anchor between Reserve Fleet units within 500 feet of the end vessels in each Reserve Fleet unit, or within 500 feet of the extreme units of the fleets, unless specific permission to do so has first been granted in each case by the enforcing agency.

(1264) (c) The regulations in this section shall be enforced by the respective Fleet Superintendents and such agencies as they may designate.

Part 164–Navigation Safety Regulations (in part).

For a complete description of this part see 33 CFR 164.

§164.01 Applicability.

(1265) (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.

(1266) (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–

(1267) (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;

(1268) (2) Used solely for assistance towing as defined by 46 CFR 10.103;

(1269) (3) Used solely for pollution response; or

(1270) (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.

(1271) (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.

(1272) (d) Provisions of §164.46 apply to some self-propelled vessels of less than 1600 gross tonnage.

§164.02 Applicability exception for foreign vessels.

(1273) (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:

(1274) (1) Are not destined for, or departing from, a port or place subject to the jurisdiction of the United States; and

(1275) (2) Are in:

(1276) (i) Innocent passage through the territorial sea of the United States; or

(1277) (ii) Transit through navigable waters of the United States which form a part of an international strait.

§164.03 Incorporation by reference.

(1278) (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 Navigation 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.

(1279) (b) The materials approved for incorporation by reference in this part and the sections affected are as follows:

(1280) American Petroleum Institute (API), 1220 L Street NW., Washington, DC 20005

(1281) API Specifications 9A, Specification for Wire Rope, Section 3, Properties and Tests for Wire and Wire Rope, May 28, 1984—**164.74**

(1282) American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

(1283) ASTM D4268–93, Standard Test Method for Testing Fiber Ropes—**164.74**

(1284) Cordage Institute, 350 Lincoln Street, Hingham, MA 02043

(1285) CIA–3, Standard Test Methods for Fiber Rope Including Standard Terminations, Revised, June 1980—**164.74**

(1286) International Electrotechnical Commission (IEC) 3, rue de Varemb, Geneva, Switzerland.

(1287) 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**

(1288) 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**

(1289) Resolution MSC.74(69), Annex 3, Recommendation on Performance Standards for a Universal Shipborne Automatic Identification System (AIS), adopted May 12, 1998—**164.46**

(1290) SN/Circ.227, Guidelines for the Installation of a Shipborne Automatic Identification System (AIS), dated January 6, 2003—**164.46**

(1291) 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**

(1292) 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**

(1293) International Telecommunication Union Radiocommunication Bureau (ITU–R), Place de Nations CH–1211 Geneva 20 Switzerland

(1294) (1) ITU–R Recommendation M.821, Optional Expansion of the Digital Selective-Calling System for Use in the Maritime Mobile Service, 1992—**164.43**

(1295) (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**

(1296) 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**

(1297) Radio Technical Commission for Maritime Services, 655 Fifteenth Street, NW., Suite 300, Washington, DC 20005

(1298) (1) RTCM Paper 12–78/DO-100, Minimum Performance Standards, Loran C Receiving Equipment, 1977—**164.41**

(1299) (2) RTCM Paper 194–93/SC104–STD, RTCM Recommended Standards for Differential NAVSTAR GPS Service, Version 2.1, 1994—**164.43**

(1300) (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**

(1301) (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 underway: General.

(1302) The owner, master, or person in charge of each vessel underway shall ensure that:

(1303) (a) The wheelhouse is constantly manned by persons who–

(1304) (1) Direct and control the movement of the vessel; and

(1305) (2) Fix the vessel's position;

(1306) (b) Each person performing a duty described in paragraph (a) of this section is competent to perform that duty;

(1307) (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;

(1308) (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;

(1309) (e) Buoys alone are not used to fix the vessel's position;

(1310) **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.

(1311) (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;

(1312) (g) Rudder orders are executed as given;

(1313) (h) Engine speed and direction orders are executed as given;

(1314) (i) Magnetic variation and deviation and gyrocompass errors are known and correctly applied by the person directing the movement of the vessel;

(1315) (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.);

(1316) (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.

(1317) (1) Current velocity and direction for the area to be transited are known by the person directing the movement of the vessel;

(1318) (m) Predicted set and drift are known by the person directing movement of the vessel;

(1319) (n) Tidal state for the area to be transited is known by the person directing movement of the vessel;

(1320) (o) The vessel's anchors are ready for letting go;

(1321) (p) The person directing the movement of the vessel sets the vessel's speed with consideration for–

(1322) (1) The prevailing visibility and weather conditions;

(1323) (2) The proximity of the vessel to fixed shore and marine structures;

(1324) (3) The tendency of the vessel underway to squat and suffer impairment of maneuverability when there is small underkeel clearance;

(1325) (4) The comparative proportions of the vessel and the channel;

(1326) (5) The density of marine traffic;

(1327) (6) The damage that might be caused by the vessel's wake;

(1328) (7) The strength and direction of the current; and

(1329) (8) Any local vessel speed limit;

(1330) (q) The tests required by §164.25 are made and recorded in the vessel's log; and

(1331) (r) The equipment required by this part is maintained in operable condition.

(1332) (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.

(1333) (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.

(1334) (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.

(1335) (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.

(1336) (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 an engineer with an appropriately endorsed license or merchant mariner credential.

(1337) (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.

(1338) (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:

(1339) (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).

(1340) (2) A qualified helmsman is present at the helm and prepared at all times to assume manual control.

(1341) (3) The tanker is not operating in any of the following areas:

(1342) (i) The areas of the traffic separation schemes specified in subchapter P of this chapter.

(1343) (ii) The portions of a shipping safety fairway specified in part 166 of this chapter.

(1344) (iii) An anchorage ground specified in part 110 of this chapter.

(1345) (iv) An area within one-half nautical mile of any U.S. shore.

(1346) (e) A tanker equipped with an integrated navigation system, and complying with paragraph (d)(2) of this section, may use the system with the auto pilot engaged while in the areas described in paragraphs (d)(3) (i) and (ii) of this section. The master shall provide, upon request, documentation showing that the integrated navigation system–

(1347) (1) Can maintain a predetermined trackline with a cross track error of less than 10 meters 95 percent of the time;

(1348) (2) Provides continuous position data accurate to within 20 meters 95 percent of the time; and

(1349) (3) Has an immediate override control.

§164.15 Navigation bridge visibility.

(1350) (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:

(1351) (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.

(1352) (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.

(1353) (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.

(1354) (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.

(1355) (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.

(1356) The master or person in charge of each vessel that is anchored shall ensure that–

(1357) (a) A proper anchor watch is maintained;

(1358) (b) Procedures are followed to detect a dragging anchor; and

(1359) (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.

(1360) (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:

(1361) (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:

(1362) (i) Each remote steering gear control system.

(1363) (ii) Each steering position located on the navigating bridge.

(1364) (iii) The main steering gear from the alternative power supply, if installed.

(1365) (iv) Each rudder angle indicator in relation to the actual position of the rudder.

(1366) (v) Each remote steering gear control system power failure alarm.

(1367) (vi) Each remote steering gear power unit failure alarm.

(1368) (vii) The full movement of the rudder to the required capabilities of the steering gear.

(1369) (2) All internal vessel control communications and vessel control alarms.

(1370) (3) Standby or emergency generator, for as long as necessary to show proper functioning, including steady state temperature and pressure readings.

(1371) (4) Storage batteries for emergency lighting and power systems in vessel control and propulsion machinery spaces.

(1372) (5) Main propulsion machinery, ahead and astern.

(1373) (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.

(1374) (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.

(1375) (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:

(1376) (1) Operation of the main steering gear from within the steering gear compartment.

(1377) (2) Operation of the means of communications between the navigating bridge and the steering compartment.

(1378) (3) Operation of the alternative power supply for the steering gear if the vessel is so equipped.

§164.30 Charts, publications, and equipment: General.

(1379) 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.

(1380) (a) Each vessel must have the following:

(1381) (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–

(1382) (i) Are of a large enough scale and have enough detail to make safe navigation of the area possible; and

(1383) (ii) Are currently corrected.

(1384) (2) For the area to be transited, a currently corrected copy of, or applicable currently corrected extract from, each of the following publications:

(1385) (i) U.S. Coast Pilot.

(1386) (ii) Coast Guard Light List.

(1387) (3) For the area to be transited, the current edition of, or applicable current extract from:

(1388) (i) Tide tables published by private entities using data provided by the National Ocean Service.

(1389) (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.

(1390) (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.

(1391) (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.

(1392) Each vessel must have the following:

(1393) (a) A marine radar system for surface navigation.

(1394) (b) An illuminated magnetic steering compass, mounted in a binnacle, that can be read at the vessel's main steering stand.

(1395) (c) A current magnetic compass deviation table or graph or compass comparison record for the steering compass, in the wheelhouse.

(1396) (d) A gyrocompass.

(1397) (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.

(1398) (f) An illuminated rudder angle indicator in the wheelhouse.

(1399) (g) The following maneuvering information prominently displayed on a fact sheet in the wheelhouse:

(1400) (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.

(1401) (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.

(1402) (3) For each vessel with a fixed propeller, a table of shaft revolutions per minute for a representative range of speeds.

(1403) (4) For each vessel with a controllable pitch propeller, a table of control settings for a representative range of speeds.

(1404) (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.

(1405) (6) The maneuvering information for the normal load and normal ballast condition for–

(1406) (i) Calm weather-wind 10 knots or less, calm sea;

(1407) (ii) No current;

(1408) (iii) Deep water conditions-water depth twice the vessel's draft or greater; and

(1409) (iv) Clean hull.

(1410) (7) At the bottom of the fact sheet, the following statement:

(1411) Warning.

(1412) 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:

(1413) (1) Calm weather-wind 10 knots or less, calm sea;

(1414) (2) No current;

(1415) (3) Water depth twice the vessel's draft or greater;

(1416) (4) Clean hull; and

(1417) (5) Intermediate drafts or unusual trim.

(1418) (h) An echo depth sounding device.

(1419) (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.

(1420) (j) Equipment on the bridge for plotting relative motion.

(1421) (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.

(1422) (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.

(1423) (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.

(1424) (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.

(1425) (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.

(1426) (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.

(1427) **Note:** 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.

(1428) (b) On each tanker of 10,000 gross tons or more that is subject to 46 U.S.C. 3708, 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).

(1429) (See 33 CFR 164.)

§164.39 Steering gear: Foreign tankers.

(1430) (a) This section applies to each foreign tanker of 10,000 gross tons or more, except a public vessel, that–

(1431) (1) Transfers oil at a port or place subject to the jurisdiction of the United States; or

(1432) (2) Otherwise enters or operates in the navigable waters of the United States, except a vessel described by §164.02 of this part.

(1433) (b) Definitions. The terms used in this section are as follows:

(1434) Constructed means the same as in Chapter II–1, Regulations 1.1.2 and 1.1.3.1, of SOLAS 74.

(1435) Existing tanker means a tanker–

(1436) (1) For which the building contract is placed on or after June 1, 1979;

(1437) (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;

(1438) (3) The delivery of which occurs on or after June 1, 1982; or

(1439) (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.

(1440) Public vessel, oil, hazardous materials, and foreign vessel mean the same as in 46 U.S.C. 2101.

(1441) SOLAS 74 means the International Convention for the Safety of Life at Sea, 1974, as amended.

(1442) 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).

(1443) (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.

(1444) (d) Each tanker constructed before September 1, 1984, must meet the requirements of Chapter II–1, Regulation 29.19, of SOLAS 74.

(1445) (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.

(1446) (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.

(1447) (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.

(1448) (b) The device must meet the following specifications:

(1449) (1) The display must be easily readable on the bridge by day or night.

(1450) (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.

(1451) (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.

(1452) (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–

(1453) (1) Automatic acquisition of satellite signals after initial operator settings have been entered; and

(1454) (2) Position updates derived from satellite information during each usable satellite pass.

(1455) (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, 1). 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.

(1456) **Note.**–The Federal Radionavigation Plan is available from the National Technical Information Service, Springfield, VA 22161, with the following Government Accession Numbers:

(1457) Vol 1, ADA 116468

(1458) Vol 2, ADA 116469

(1459) Vol 3, ADA 116470

(1460) Vol 4, ADA 116471

§164.42 Rate of turn indicator.

(1461) 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.

(1462) (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:

(1463) (1) Twelve-channel all-in-view Differential Global Positioning System (dGPS) receiver;

(1464) (2) Marine band Non-Directional Beacon receiver capable of receiving dGPS error correction messages;

(1465) (3) VHF–FM transceiver capable of Digital Selective Calling (DSC) on the designated DSC frequency; and

(1466) (4) Control unit.

(1467) (b) An AISSE must have the following capabilities:

(1468) (1) Use dGPS to sense the position of the vessel and determine the time of the position using Universal Coordinated Time (UTC);

(1469) (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;

(1470) (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;

(1471) (4) Achieve a course error of less than 0.5 degrees from true course over ground in the course information transmitted to a VTS;

(1472) (5) Achieve a speed error of less than 0.05 knots from true speed over ground in the speed information transmitted to a VTS;

(1473) (6) Receive and comply with commands broadcast from a VTS as DSC messages on the designated DSC frequency;

(1474) (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;

(1475) (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;

(1476) (9) Display a visual alarm to indicate to shipboard personnel when a failure to receive or utilize the RTCM messages occurs;

(1477) (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

(1478) (11) Display two RTCM type 16 messages, one of which must display the position error in the position error broadcast.

(1479) (c) An AISSE is considered non-operational if it fails to meet the requirements of paragraph (b) of this section.

(1480) **Note:** Vessel Traffic Service (VTS) areas and operating procedures are set forth in Part 161 of this chapter.

§164.46 Automatic Identification System (AIS).

(1481) (a) The following vessels must have a properly installed, operational, type approved AIS as of the date specified:

(1482) (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.

(1483) (2) Nothwithstanding 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):

(1484) (i) Passenger vessels, of 150 gross tonnage or more, not later than July 1, 2003;

(1485) (ii) Tankers, regardless of tonnage, not later than the first safety survey for safety equipment on or after July 1, 2003;

(1486) (iii) Vessels, other than passenger vessels or tankers, of 50,000 gross tonnage or more, not later than July 1, 2004; and

(1487) (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.

(1488) (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:

(1489) (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;

(1490) (ii) Towing vessels of 26 feet or more in length and more than 600 horsepower, in commercial service;

(1491) (iii) Passenger vessels certificated to carry more than 150 passengers-for-hire.

(1492) **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.

(1493) (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.

(1494) (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.

(1495) (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.

(1496) 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.

(1497) (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 Commander or the Captain of the Port, as provided by 33 CFR 160.

(1498) (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.

(1499) 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.

(1500) 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–

(1501) (a) Ensure compliance with 46 CFR 4.05, "Notice of Marine Casualty and Voyage Records," and

(1502) (b) Ensure that the voyage records required by 46 CFR 4.05–15 are retained for–

(1503) (1) 30 days after the casualty if the vessel remains in the navigable waters of the United States; or

(1504) (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.

(1505) For purposes of §§164.72 through 164.82, the term–

(1506) Current edition means the most recent published version of a publication, chart, or map required by §164.72.

(1507) 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.

(1508) 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.

(1509) Merchant mariner credential or MMC means the credential issued by the Coast Guard under 46 CFR part 10. It combines the individual merchant mariner's document, license, and certificate of registry enumerated in 46 U.S.C. subtitle II part E as well as the STCW endorsement into a single credential that serves as the mariner's qualification document, certificate of identification, and certificate of service.

(1510) Swing-meter means an electronic or electric device that indicates that rate of turn of the vessel on board which it is installed.

(1511) 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.

(1512) 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.

(1513) (a) Except as provided by §164.01(b), each towing vessel must be equipped with the following navigational-safety equipment:

(1514) (1) Marine Radar. By August 2, 1997, a marine radar that meets the following applicable requirements:

(1515) (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–

(1516) (A) The requirements of the Federal Communications Commission (FCC) specified by 47 CFR part 80; and

(1517) (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.

(1518) (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–

(1519) (A) The requirements of the FCC specified by 47 CFR part 80; and

(1520) (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.

(1521) (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–

(1522) (A) The requirements of the Federal Communications Commission (FCC) specified by 47 CFR part 80; and

(1523) (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.

(1524) (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–

(1525) (A) The requirements of the FCC specified by 47 CFR Part 80; and

(1526) (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.

(1527) (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.

(1528) (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.

(1529) (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.)

(1530) (4) Magnetic Compass. Either–

(1531) (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

(1532) (ii) An illuminated card-type magnetic steering compass readable from the vessel's main steering station.

(1533) (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.

(1534) (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.

(1535) (b) Each towing vessel must carry on board and maintain the following:

(1536) (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.

(1537) (i) The charts or maps must be of a large enough scale and have enough detail to make safe navigation of the areas possible.

(1538) (ii) The charts or maps must be either–

(1539) (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

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.

(1540) (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.

(1541) (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.

(1542) (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:

(1543) (i) If the vessel is engaged in towing exclusively on Western Rivers–

(1544) (A) U.S. Coast Guard Light List;

(1545) (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

(1546) (C) River-current tables published by the ACOE or a river authority, if available.

(1547) (ii) if the vessel is engaged other than in towing exclusively on Western Rivers–

(1548) (A) Coast Guard Light List;

(1549) (B) Notices to Mariners published by the National Geospatial-Intelligence Agency, or LNMs published by the Coast Guard;

(1550) (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:

(1551) (D) Tide tables published by private entities using data provided by the NOS; and

(1552) (E) U.S. Coast Pilot.

(1553) (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.

(1554) (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:

(1555) (1) The size and material of each towline must be–

(1556) (i) Appropriate for the horsepower or bollard pull of the vessel;

(1557) (ii) Appropriate for the static loads and dynamic loads expected during the intended service;

(1558) (iii) Appropriate for the sea conditions expected during the intended service;

(1559) (iv) Appropriate for exposure to the marine environment and to any chemicals used or carried on board the vessel;

(1560) (v) Appropriate for the temperatures of normal stowage and service on board the vessel;

(1561) (vi) Compatible with associated navigational-safety equipment; and

(1562) (vii) Appropriate for the likelihood of mechanical damage.

(1563) (2) Each towline as rigged must be–

(1564) (i) Free of knots;

(1565) (ii) Spliced with a thimble, or have a poured socket at its end; and

(1566) (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.

(1567) (3) The condition of each towline must be monitored through the–

(1568) (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;

(1569) (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 Specifications 9A, Section 3; ASTM D 4268 (incorporated by reference, see §164.03); or Cordage Institute CIA 3, Standard Test Methods;

(1570) (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);

(1571) (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–

(1572) (A) Nautical miles on, or time in service of, the towline;

(1573) (B) Operating conditions experienced by the towline;

(1574) (C) History of loading of the towline;

(1575) (D) Surface condition, including corrosion and discoloration, of the towline;

(1576) (E) Amount of visible damage to the towline;

(1577) (F) Amount of material deterioration indicated by measurements of diameter and, if applicable, measurements of lay extension of the towline; and

(1578) (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

(1579) (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.

(1580) (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:

(1581) (1) The material and size of the terminal gear are appropriate for the strength and anticipated loading of the towline and for the environment;

(1582) (2) Each connection is secured by at least one nut with at least one cotter pin or other means of preventing its failure;

(1583) (3) The lead of the towline is appropriate to prevent sharp bends in the towline from fairlead blocks, chocks, or tackle;

(1584) (4) There is provided a method, whether mechanical or non-mechanical, that does not endanger operating personnel but that easily releases the towline;

(1585) (5) The towline is protected from abrasion or chafing by chafing gear, lagging, or other means;

(1586) (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

(1587) (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.

(1588) The owner, master, or operator of each vessel towing alongside or pushing ahead shall ensure the face wires, spring lines, and push gear used–

(1589) (a) Are appropriate for the vessel's horsepower;

(1590) (b) Are appropriate for the arrangement of the tow;

(1591) (c) Are frequently inspected; and

(1592) (d) Remain serviceable.

§164.78 Navigation underway: Towing vessels.

(1593) (a) The owner, master, or operator of each vessel towing shall ensure that each person directing and controlling the movement of the vessel–

(1594) (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;

(1595) (2) Can fix the position of the vessel using installed navigational equipment, aids to navigation, geographic reference-points, and hydrographic contours;

(1596) (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.);

(1597) (4) Evaluates the danger of each closing visual or radar contact;

(1598) (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;

(1599) (6) Knows the speed and direction of the current, and the set, drift, and tidal state for the area to be transited;

(1600) (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-limits; and

(1601) (8) Monitors the voyage plan required by §164.80.

(1602) (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.

(1603) (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:

(1604) (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.

(1605) (2) Navigational equipment. A test of all installed navigational equipment.

(1606) (3) Communications. Operation of all internal vessel control communications and vessel-control alarms, if installed.

(1607) (4) Lights. Operation of all navigational lights and all searchlights.

(1608) (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.

(1609) (6) Propulsion systems. Visual inspection of the spaces for main propulsion machinery, of machinery, and of devices for monitoring machinery.

(1610) (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:

(1611) (1) Navigational equipment. Tests of onboard equipment as required by §164.25.

(1612) (2) Terminal gear. Visual inspection of tackle; of connections of bridle and towing pendant, if applicable; of chafing gear; and of the winch brake, if installed.

(1613) (c)(1) The voyage-planning requirements outlined in this section do not apply to you if your towing vessel is–

(1614) (i) Used solely for any of the following services or any combination of these services–

(1615) (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:

(1616) (B) For harbor assist;

(1617) (C) For assistance towing as defined by 46 CFR 10.103;

(1618) (D) For response to emergency or pollution;

(1619) (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;

(1620) (iii) A foreign vessel engaged in innocent passage; or

(1621) (iv) Exempted by the Captain of the Port (COTP).

(1622) (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.

(1623) (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):

(1624) (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;

(1625) (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);

(1626) (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;

(1627) (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;

(1628) (v) Pre-departure checklists;

(1629) (vi) Calculated speed and estimated time of arrival at proposed waypoints;

(1630) (vii) Communication contacts at any Vessel Traffic Services, bridges, and facilities, and any port specific requirements for VHF radio;

(1631) (viii) Any master's or operator's standings orders detailing closest points of approach, special conditions, and critical maneuvers; and

(1632) (ix) Whether the towing vessel has sufficient power to control the tow under all foreseeable circumstances.

§164.82 Maintenance, failure, and reporting.

(1633) (a) Maintenance. The owner, master, or operator of each towing vessel shall maintain operative the navigational-safety equipment required by §164.72.

(1634) (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.

(1635) (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:

(1636) (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;

(1637) (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

(1638) (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.)

(1639) (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.

(1640) (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.

(1641) (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.

(1642) The purpose of this part is to–

(1643) (a) Prescribe procedures for establishing different types of limited or controlled access areas and regulated navigation areas;

(1644) (b) Prescribe general regulations for different types of limited or controlled access areas and regulated navigation areas;

(1645) (c) Prescribe specific requirements for established areas; and

(1646) (d) List of specific areas and their boundaries.

§165.5 Establishment procedures.

(1647) (a) A safety zone, security zone, or regulated navigation area may be established on the initiative of any authorized Coast Guard official.

(1648) (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:

(1649) (1) The name of the person submitting the request;

(1650) (2) The location and boundaries of the safety zone, security zone, or regulated navigation area;

(1651) (3) The date, time, and duration that the safety zone, security zone, or regulated navigation area should be established;

(1652) (4) A description of the activities planned for the safety zone, security zone, or regulated navigation area;

(1653) (5) The nature of the restrictions or conditions desired; and

(1654) (6) The reason why the safety zone, security zone, or regulated navigation area is necessary.

(1655) (Requests for safety zones, security zones, and regulated navigation areas are approved by the Office of Management and Budget under control number 1625–0020.)

(1656) (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.

(1657) (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.

(1658) (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.

(1659) (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.

(1660) 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.

(1661) (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.

(1662) (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.

(1663) (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.

(1664) (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 3 nautical miles from the baseline.

Subpart B–Regulated Navigation Areas

§165.10 Regulated navigation area.

(1665) 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).

(1666) Each District Commander may control vessel traffic in an area which is determined to have hazardous conditions, by issuing regulations–

(1667) (a) Specifying times of vessel entry, movement, or departure to, from, within, or through ports, harbors, or other waters;

(1668) (b) Establishing vessel size, speed, draft limitations, and operating conditions; and

(1669) (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.

(1670) (a) The master of a vessel in a regulated navigation area shall operate the vessel in accordance with the regulations contained in Subpart F.

(1671) (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.

(1672) 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.

(1673) Unless otherwise provided in this part–

(1674) (a) No person may enter a safety zone unless authorized by the COTP or the District Commander;

(1675) (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;

(1676) (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

(1677) (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.

(1678) (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.

(1679) (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:

(1680) (1) Vessels,

(1681) (2) Harbors,

(1682) (3) Ports, and

(1683) (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.

(1684) Unless otherwise provided in the special regulations in Subpart F of this part:

(1685) (a) No person or vessel may enter or remain in a security zone without the permission of the Captain of the Port;

(1686) (b) Each person and vessel in a security zone shall obey any direction or order of the Captain of the Port;

(1687) (c) The Captain of the Port may take possession and control of any vessel in the security zone;

(1688) (d) The Captain of the Port may remove any person, vessel, article, or thing from a security zone;

(1689) (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

(1690) (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 Areas

§165.40 Restricted Waterfront Areas.

(1691) 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.

Subpart F–Specific Regulated Navigation Areas and Limited Access Areas

§165.100 Regulated Navigation Area: Navigable waters within the First Coast Guard District.

(1692) (a) Regulated navigation area. All navigable waters of the United States, as that term is used in 33 CFR 2.36, within the geographic boundaries of the First Coast Guard District, as defined in 33 CFR 3.05-1(b).

(1693) (b) Definitions. Terms used in this section have the same meaning as those found in 33 CFR 157.03. Single-hull identifies any tank barge that is not a double-hull tank barge.

(1694) (c) Applicability. This section applies to primary towing vessels engaged in towing tank barges carrying petroleum oil in bulk as cargo in the regulated navigation area, or as authorized by the District commander.

(1695) (d) Regulations–(1) Positive control for barges. (i) Except as provided in paragraph (d)(1)(iii) and paragraph 5 of this section, each single hull tank barge, unless being towed by a primary towing vessel with twin-screw propulsion and with a separate system for power to each screw, must be accompanied by an escort tug of sufficient capability to promptly push or tow the tank

barge away from danger of grounding or collision in the event of–

(1696) (A) A propulsion failure;

(1697) (B) A parted towing line;

(1698) (C) A loss of tow;

(1699) (D) A fire;

(1700) (E) Grounding;

(1701) (F) A loss of steering; or

(1702) (G) Any other time a vessel may be operating in a Hazardous Vessel Operating Condition as defined in §161.2 of this Chapter.

(1703) (ii) Double-hull tank barges are exempt from paragraph (d)(1)(i) of this section.

(1704) (iii) The cognizant Captain of the Port (COTP), upon written application, may authorize an exemption from the requirements of paragraph (d)(1)(i) of this section for–

(1705) (A) Any tank barge with a capacity of less than 25,000 barrels, operating in an area with limited depth or width such as a creek or small river; or

(1706) (B) Any tank barge operating on any waters within the COTP Zone, if the operator demonstrates to the satisfaction of the COTP that the barge employs an equivalent level of safety to that provided by the positive control provisions of this section. Each request for an exemption under this paragraph must be submitted in writing to the cognizant COTP no later than 7 days before the intended transit.

(1707) (iv) The operator of a towing vessel engaged in towing any tank barge must immediately call for an escort or assist tug to render assistance in the event of any of the occurrences identified in paragraph (d)(1)(i) of this section.

(1708) (2) Enhanced communications. Each vessel engaged in towing a tank barge must communicate by radio on marine band or Very High Frequency (VHF) channel 13 or 16, and issue security calls on marine band or VHF channel 13 or 16, upon approach to the following places:

(1709) (i) Execution Rocks Light (LLNR 21440).

(1710) (ii) Matinecock Point Shoal Buoy (LLNR 21420).

(1711) (iii) 32A Buoy (LLNR 21380).

(1712) (iv) Cable and Anchor Reef Buoy (LLNR 21330).

(1713) (v) Stratford Middle Ground Light (LLNR 21260).

(1714) (vi) Old Field Point Light (LLNR 21275).

(1715) (vii) Approach to Stratford Point from the south (NOAA Chart 12370).

(1716) (viii) Falkner Island Light (LLNR 21170).

(1717) (ix) TE Buoy (LLNR 21160).

(1718) (x) CF Buoy (LLNR 21140).

(1719) (xi) PI buoy (LLNR 21080).

(1720) (xii) Race Rock Light (LLNR 19815).

(1721) (xiii) Valiant Rock Buoy (LLNR 19825).

(1722) (xiv) Approach to Point Judith in vicinity of Block Island ferry route.

(1723) (xv) Buzzards Bay Entrance Light (LLNR 630).

(1724) (xvi) Buzzards Bay Midchannel Lighted Buoy (LLNR 16055)

(1725) (xvii) Cleveland East Ledge Light (LLNR 16085).

(1726) (xviii) Hog Island buoys 1 (LLNR 16130) and 2 (LLNR 16135).

(1727) (xix) Approach to the Bourne Bridge.

(1728) (xx) Approach to the Sagamore Bridge.

(1729) (xxi) Approach to the eastern entrance of Cape Cod Canal.

(1730) (3) Voyage planning. (i) Each owner or operator of a towing vessel employed to tow a tank barge shall prepare a written voyage plan for each transit of the tank barge.

(1731) (ii) The watch officer is authorized to make modifications to the plan and validate it as necessary.

(1732) (iii) Except as provided in paragraph (d)(3)(iv) of this section, each voyage plan must contain:

(1733) (A) A description of the type, volume, and grade of cargo.

(1734) (B) Applicable information from nautical charts and publications, including Coast Pilot, Coast Guard Light List, and Coast Guard Local Notice to Mariners, for the destination(s).

(1735) (C) Current and forecasted weather, including visibility, wind, and sea state for the destination(s).

(1736) (D) Data on tides and tidal currents for the destination(s).

(1737) (E) Forward and after drafts of the tank barge, and under-keel and vertical clearances for each port and berthing area.

(1738) (F) Pre-departure checklists.

(1739) (G) Calculated speed and estimated times of arrival at proposed waypoints.

(1740) (H) Communication contacts at Vessel Traffic Service (VTS) (If applicable), bridges, and facilities, and port-specific requirements for VHF radio.

(1741) (I) The master's standing orders detailing closest points of approach, special conditions, and critical maneuvers.

(1742) (iv) Each owner or operator of a tank barge on an intra-port transit of not more than four hours may prepare a voyage plan that contains:

(1743) (A) The information described in paragraphs (d)(3)(iii)(D) and (E) of this section.

(1744) (B) Current weather conditions including visibility, wind, and sea state. This information may be entered in either the voyage plan or towing vessel's log book.

(1745) (C) The channels of VHF radio to monitor.

(1746) (D) Other considerations such as availability of pilot, assist tug, berth, and line-handlers, depth of berth at mean low water, danger areas, and security calls.

(1747) (4) Navigation restriction areas. Unless authorized by the cognizant COTP, no tank barge may operate in–

(1748) (i) The waters of Cape Cod Bay south of latitude 42°05' North and east of longitude 70°25' West; or

(1749) (ii) The waters of Fishers Island Sound east of longitude 72°02' West, and west of longitude 71°55' West.

(1750) (5) Special Buzzards Bay Regulations. (i) For the purposes of this section, "Buzzards Bay" is the body of water east and north of a line drawn from the southern

tangent of Sakonnet Point, Rhode Island, in approximate position 41°27.2'N., 70°11.7'W., to the Buzzards Bay Entrance Light in approximate position 41°23.5'N., 71°02.0'W., and then to the southwestern tangent of Cuttyhunk Island, Massachusetts, at approximate position 41°24.6'N., 70°57.0'W., and including all of the Cape Cod Canal to its eastern entrance, except that the area of New Bedford harbor within the confines (north) of the hurricane barrier, and the passages through the Elizabeth Islands, is not considered to be "Buzzards Bay".

(1751) (ii) Additional Positive Control for Barges. Except as provided in paragraph (d)(1)(iii) of this section, each single hull tank barge transiting Buzzards Bay and carrying 5,000 or more barrels of oil or other hazardous material must, in addition to its primary tug, be accompanied by an escort tug of sufficient capability to promptly push or tow the tank barge away from danger of grounding or collision in the event of–

(1752) (A) A propulsion failure;

(1753) (B) A parted tow line;

(1754) (C) A loss of tow;

(1755) (D) A fire;

(1756) (E) Grounding;

(1757) (F) A loss of steering; or

(1758) (G) Any other time a vessel may be operating in a Hazardous Vessel Operating Condition as defined in §161.2 of this subchapter.

(1759) (iii) Federal Pilotage. Each single hull tank barge transiting Buzzards Bay and carrying 5,000 or more barrels of oil or other hazardous material must be under the direction and control of a pilot, who is not a member of the crew, operating under a valid, appropriately endorsed, Federal first class pilot's license issued by the Coast Guard ("federally licensed pilot"). Pilots are required to embark, direct, and control from the primary tug during transits of Buzzards Bay.

(1760) (iv) Vessel Movement Reporting System. In addition to the vessels denoted in §161.16 of this chapter, requirements set forth in subpart B of Part 161 also apply to any vessel transiting VMRS Buzzards Bay when equipped with a bridge-to-bridge radiotelephone as defined in part 26 of this chapter.

(1761) (A) VMRS Buzzards Bay user must:

(1762) (1) Not enter or get underway in the area without first notifying the VMRS Center;

(1763) (2) Not enter VMRS Buzzards Bay if a Hazardous Vessel Operating Condition or circumstance per §161.2 of this Subchapter exists:

(1764) (3) If towing astern, do so with as short a hawser as safety and good seamanship permits;

(1765) (4) Not meet, cross, or overtake any other VMRS user in the area without first notifying the VMRS center;

(1766) (5) Before meeting, crossing, or overtaking any other VMRS user in the area, communicate on the designated vessel bridge-to-bridge radiotelephone frequency, intended navigation movements, and any other information necessary in order to make safe passing arrangements. This requirement does not relieve a vessel of any duty prescribed by the International Regulations for Prevention of Collisions at Sea, 1972 (33 U.S.C. 1602(c)) or the Inland Navigation Rules (33 U.S.C. 2005).

(1767) (B) [Reserved]

(1768) (e) In addition to the authority for this part 165, this section is also authorized under authorized under authority of section 311, Pub. L. 105–383.

§165.500 Safety/Security Zones; Chesapeake Bay, Maryland.

(1769) (a) Definitions. (1) Certain Dangerous Cargo (CDC) means a material defined in 33 CFR part 160.

(1770) (2) Liquefied Hazardous Gas (LHG) means a material defined in 33 CFR part 127.

(1771) (3) Liquefied Natural Gas (LNG) means a material defined in 33 CFR part 127.

(1772) (4) Cruise ship means a vessel defined as a "passenger vessel" in 46 U.S.C. 2101 (22).

(1773) (b) Location. The following areas are a safety/security zone: All waters of the Chesapeake Bay and its tributaries, from surface to bottom, within a 500 yard radius around cruise ships and vessels transporting CDC, LNG, or LHG while transiting, anchored, or moored within the COTP Baltimore zone.

(1774) (c) Regulations. (1) The COTP will notify the maritime community of affected vessels and the periods during which the safety/security zones will be enforced by providing notice to mariners in accordance with 33 CFR 165.7.

(1775) (2) Entry into or remaining in this zone is prohibited unless authorized by the Coast Guard COTP, Baltimore, Maryland or his designated representative.

(1776) (3) Persons desiring to transit the area of the security zone may contact the COTP at telephone number 410–576–2693 or on VHF 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 COTP or his or her designated representative.

(1777) (d) Authority. In addition to 33 U.S.C. 1231, the authority for this section includes 50 U.S.C. 191.

§165.501 Chesapeake Bay entrance and Hampton Roads, VA and adjacent waters–Regulated Navigation Area.

(1778) (a) Location. The waters enclosed by the shoreline and the following lines are a Regulated Navigation Area:

(1779) (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.

(1780) (2) Inland zone. The waters enclosed by the shoreline and the following lines:

(1781) (i) A line drawn across the entrance to Chesapeake Bay between Wise Point and Cape Charles Light, and then continuing to Cape Henry Light.

(1782) (ii) A line drawn across the Chesapeake Bay between Old Point Comfort Light and Cape Charles City Range "A" Rear Light.

(1783) (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.

(1784) (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.

(1785) (v) A line drawn across the Nansemond River along the northern side of the Mills Godwin (U.S. Route 17) Bridge, Suffolk, Virginia.

(1786) (vi) A line drawn across the mouth of Bennetts Creek, Suffolk, Virginia.

(1787) (vii) A line drawn across the Western Branch of the Elizabeth River along the eastern side of the West Norfolk Bridge, Portsmouth, Virginia.

(1788) (viii) A line drawn across the Southern Branch of the Elizabeth River along the northern side of the I–64 highway bridge, Chesapeake, Virginia.

(1789) (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.

(1790) (x) A line drawn across the Lafayette River along the western side of the Hampton Boulevard Bridge, Norfolk, Virginia.

(1791) (xi) A line drawn across Little Creek along the eastern side of the Ocean View Avenue (U.S. Route 60) Bridge, Norfolk, Virginia.

(1792) (xii) A line drawn across Lynnhaven Inlet along the northern side of Shore Drive (U.S. Route 60) Bridge, Virginia Beach, Virginia.

(1793) (b) Definitions. In this section:

(1794) CBBT means the Chesapeake Bay Bridge Tunnel.

(1795) 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.

(1796) 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.

(1797) I–664 Bridge Tunnel means the Monitor Merrimac Bridge Tunnel.

(1798) Inland waters means waters within the COLREGS Line of Demarcation.

(1799) 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.

(1800) 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.

(1801) 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.

(1802) (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:

(1803) (1) Law enforcement.

(1804) (2) Servicing aids to navigation.

(1805) (3) Surveying, maintenance, or improvement of waters in the Regulated Navigation Area.

(1806) (d) Regulations.

(1807) (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:

(1808) (i) The vessel has the permission of the Captain of the Port.

(1809) (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.

(1810) (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.

(1811) (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.

(1812) (3) Secondary towing rig requirements on inland waters.

(1813) (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:

(1814) (A) Is of sufficient strength for towing the vessel.

(1815) (B) Has a connecting device that can receive a shackle pin of at least two inches in diameter.

(1816) (C) Is fitted with a recovery pickup line led outboard of the vessel's hull.

(1817) (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:

(1818) (A) Be of sufficient strength for towing the vessels.

(1819) (B) Have connecting devices that can receive a shackle pin of at least two inches in diameter.

(1820) (C) Be fitted with recovery pickup lines led outboard of the vessel's hull.

(1821) (4) Thimble Shoals Channel controls.

(1822) (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.

(1823) (ii) Except when crossing the channel, a vessel in the Thimble Shoal North Auxiliary Channel shall proceed in a westbound direction.

(1824) (iii) Except when crossing the channel, a vessel in the Thimble Shoal South Auxiliary Channel shall proceed in an eastbound direction.

(1825) (5) Restrictions on vessels with impaired maneuverability.

(1826) (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.

(1827) (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.

(1828) (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:

(1829) (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 noncommercial service may carry electronic charting and navigation systems that have met the applicable agency regulations regarding navigation safety.

(1830) (ii) An operative radar during periods of reduced visibility;

(1831) (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.

(1832) (7) Emergency procedures.

(1833) (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.

(1834) (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.

(1835) (8) Vessel speed limits.

(1836) (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).

(1837) (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.

(1838) (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.

(1839) (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:

(1840) (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.

(1841) (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.

(1842) (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.

(1843) (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.

(1844) (v) In addition to the authorities listed in this part, this paragraph is promulgated under the authority under 33 U.S.C. 1226.

(1845) (e) Waivers.

(1846) (1) The Captain of the Port may, upon request, waive any regulation in this section.

(1847) (2) An application for a waiver must state the need for the waiver and describe the proposed vessel operations.

(1848) (f) Control of vessels within the regulated navigation area.

(1849) (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.

(1850) (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.

(1851) (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.

§165.502 Safety and Security Zone; Cove Point Liquefied Natural Gas Terminal, Chesapeake Bay, Maryland.

(1852) (a) Location. The following area is a safety and security zone: All waters of the Chesapeake Bay, from surface to bottom, encompassed by lines connecting the following points, beginning at

(1853) 38°24'27"N., 76°23'42"W., thence to

(1854) 38°24'44"N., 76°23'11"W., thence to

(1855) 38°23'55"N., 76°22'27"W., thence to

(1856) 38°23'37"N., 76°22'58"W., thence to beginning at

(1857) 38°24'27"N., 76°23'42"W. These coordinates are based upon North American Datum (NAD) 1983. This area is 500 yards in all directions from the Cove Point LNG terminal structure.

(1858) (b) Regulations. (1) In accordance with the general regulations in §§165.23 and 165.33 of this part, entry into or movement within this zone is prohibited unless authorized by the Coast Guard Captain of the Port, Baltimore, Maryland or his designated representative. Designated representatives include any Coast Guard commissioned, warrant, or petty officer.

(1859) (2) Persons desiring to transit the area of the zone may contact the Captain of the Port at telephone number 410–576–2693 or via 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 designated representative.

(1860) (c) Enforcement. The U.S. Coast Guard may be assisted in the patrol and enforcement of the zone by Federal, State, local, and private agencies.

§165.503 Security Zone; Captain of the Port Hampton Roads Zone.

(1861) (a) Definitions. As used in this section–

(1862) Certain dangerous cargo or CDC means a material defined as CDC in 33 CFR 160.204.

(1863) Designated Representative of the Captain of the Port is any U.S. Coast Guard commissioned, warrant or petty officer who has been authorized by the Captain of the Port (COTP), Hampton Roads, Virginia to act on his or her behalf.

(1864) Passenger vessel means a vessel defined as a passenger vessel in 46 CFR part 70.

(1865) (b) Location. All navigable waters of the Captain of the Port Hampton Roads zone (defined in 33 CFR 3.25-10) within 500 yards around a passenger vessel or vessel carrying a CDC, while the passenger vessel or vessel carrying CDC is transiting, moored or anchored.

(1866) (c) Regulations. (1) No vessel may approach within 500 yards of a passenger vessel or vessel carrying a CDC within the Captain of the Port Hampton Roads zone, unless traveling at the minimum speed necessary to navigate safely.

(1867) (2) Under §165.33, no vessel or person may approach within 100 yards of a passenger vessel or vessel carrying a CDC within the Captain of the Port Hampton Roads zone, unless authorized by the COTP Hampton Roads or his or her designated representative.

(1868) (3) The COTP Hampton Roads 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.

(1869) (4) A security zone in effect around a moving or anchored vessel will be enforced by a law enforcement vessel. A security zone in effect around a moored vessel will be enforced by a law enforcement agent shoreside, a law enforcement vessel waterside, or both.

(1870) (5) Persons desiring to transit the area of the security zone within 100 yards of a passenger vessel or vessel carrying a CDC must contact the COTP Hampton Roads on VHF–FM channel 16 (156.8 MHz) or telephone number 757–668–5555 or 757–484–8192 to seek permission to transit the area. All persons and vessels must comply with the instructions of the COTP or the COTP's designated representative.

(1871) (d) Enforcement. The COTP will enforce these zones and may enlist the aid and cooperation of any

Federal, state, county, or municipal law enforcement agency to assist in the enforcement of the regulation.

§165.504 Newport News Shipbuilding and Dry Dock Company Shipyard, James River, Newport News, VA.

(1872) (a) Location. The following is a security zone: The waters of the James River encompassed by a line beginning at the intersection of the shoreline with the northernmost property line of the Newport News Shipbuilding and Dry Dock Co. at

(1873) 37°00'38.1"N., 76°27'05.7"W., thence southerly to

(1874) 36°59'58.4"N., 76°27'16.7"W., thence southeasterly to

(1875) 36°59'23.0"N., 76°26'54.6"W., thence westerly to

(1876) 36°59'21.5"N., 76°26'58.4"W., thence southeasterly to

(1877) 36°59'12.9"N., 76°26'52.4"W., thence easterly to

(1878) 36°59'14.2"N., 76°26'49.1"W., thence southeasterly to

(1879) 36°58'37.8"N., 76°26'26.3"W., thence easterly to

(1880) 36°58'43.5"N., 76°26'13.7"W., thence northerly to the intersection of the shoreline with the southernmost property line of the Newport News Shipbuilding and Dry Dock Co. at

(1881) 36°58'48.0"N., 76°26'11.2"W., thence northwesterly along the shoreline to the point of beginning.

(1882) (b) Security zone anchorage. The following is a security zone anchorage: The waters of the James River encompassed by a line beginning at the intersection of the shoreline with the northernmost property line of the Newport News Shipbuilding and Dry Dock Company shipyard at

(1883) 37°00'38.1"N., 76°27'05.7"W., thence southerly to

(1884) 36°59'58.4"N., 76°27'16.7"W., thence easterly to the shoreline at

(1885) 36°59'58.5"N., 76°27'11.6"W., thence along the shoreline to the point of beginning.

(1886) (c) Special Regulations.

(1887) (1) Section 165.33 (a), (e), and (f) do not apply to the following vessels or individuals on board those vessels:

(1888) (i) Public vessels of the United States.

(1889) (ii) Public vessels owned or operated by the Commonwealth of Virginia or its subdivisions for law enforcement or firefighting purposes.

(1890) (iii) Vessels owned by, operated by, or under charter to Newport News Shipbuilding and Dry Dock Co.

(1891) (iv) Vessels that are performing work at Newport News Shipbuilding and Dry Dock Co., including the vessels of subcontractors and other vendors of Newport News Shipbuilding and Dry Dock Co. or other persons that have a contractual relationship with Newport News Shipbuilding and Dry Dock Co.

(1892) (v) Vessels that are being built, rebuilt, repaired, or otherwise worked on at or by Newport News Shipbuilding and Dry Dock Co. or another person authorized to perform work at the shipyard.

(1893) (vi) Vessels that are authorized by Newport News Shipbuilding and Dry Dock Company to moor at and use its facilities.

(1894) (vii) Commercial shellfish harvesting vessels taking clams from the shellfish beds within the zone, if

(1895) (A) The owner of the vessel has previously provided the Captain of the Port, Hampton Roads, Virginia, information about the vessel, including:

(1896) (1) The name of the vessel;

(1897) (2) The vessel's official number, if documented, or state number, if numbered by a State issuing authority;

(1898) (3) A brief description of the vessel, including length, color, and type of vessel;

(1899) (4) The name, Social Security number, current address, and telephone number of the vessel's master, operator, or person in charge; and

(1900) (5) Upon request, information the vessel's crew.

(1901) (B) The vessel is operated in compliance with any specific orders issued to the vessel by the Captain of the Port or other regulations controlling the operation of vessels within the security zone that may be in effect.

(1902) (d) Enforcement. The U.S. Coast Guard may be assisted in the enforcement of this zone by the U.S. Navy.

§165.505 Security Zone; Calvet Cliffs Nuclear Power Plant, Chesapeake Bay, Calvet County, MD.

(1903) (a) Location. The following area is a security zone: All waters of the Chesapeake Bay, from surface to bottom, encompassed by lines connecting the following points, beginning at

(1904) 38°26'06"N., 076°26'18"W., thence to

(1905) 38°26'10"N., 076°26'12"W., thence to

(1906) 38°26'21"N., 076°26'28"W., thence to

(1907) 38°26'14"N., 076°26'33"W., thence to beginning at

(1908) 38°26'06"N., 076°26'18"W. These coordinates are based upon North American Datum (NAD) 1983.

(1909) (b) Regulations. (1) Entry into or remaining in this zone is prohibited unless authorized by the Coast Guard Captain of the Port, Baltimore, Maryland.

(1910) (2) Persons desiring to transit the area of the security zone may contact the Captain of the Port at telephone number 410–576–2693 or on VHF 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.

(1911) (c) 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.

§165.510 Delaware Bay and River, Salem River, Christina River and Schuylkill River–Regulated Navigation Area.

(1912) (a) Regulated Navigation Area. The following is a Regulated Navigation Area: The navigable waters of Delaware Bay and River, Salem River, Christina River, and Schuylkill River, in an area bounded on the south by a line drawn across the entrance to the Delaware Bay

between Cape May Light and Harbor of Refuge Light and then continuing to the northernmost extremity of Cape Henlopen, and bounded on the north by a line drawn across the Delaware River between Trenton, NJ and Morinville, PA along the southern side of the U.S. Route 1 Bridge.

(1913) (b) Definitions. As used in this section:

(1914) COTP means the Captain of the Port, Delaware Bay and any Coast Guard commissioned, warrant or petty officer who has been authorized by the COTP to act on his or her behalf.

(1915) Dangerous Cargo means those cargoes listed in §160.203 of this chapter when carried in bulk, but does not include cargoes listed in Table 1 of 46 CFR part 153.

(1916) Underway means that a vessel is not at anchor, made fast to the shore, or aground.

(1917) (c) Applicability. This section applies to any vessel operating within the Regulated Navigation Area, including a naval or public vessel, except a vessel engaged in:

(1918) (1) Law enforcement;

(1919) (2) Servicing aids to navigation; or

(1920) (3) Surveying, maintaining, or improving waters within the Regulated Navigation Area.

(1921) (d) Draft limitation. Unless otherwise authorized by the COTP, no vessel with a draft greater than 55 feet may enter this regulated navigation area.

(1922) **Note:** The project depth in many areas of the Regulated Navigation Area is less than 55 feet.

(1923) (e) Oil transfer operations. Unless otherwise authorized by the COTP, no vessel to vessel oil transfer operations, excluding bunkering, may be conducted within the area between the southern boundary of this regulated navigation area and the southern span of the Delaware Memorial Bridge except within the anchorage ground designated in §110.157(a)(1) of this chapter.

(1924) (f) Requirements for vessels carrying dangerous cargoes. The master, owner, or operator of a vessel carrying a dangerous cargo shall:

(1925) (1) Notify the COTP at least 72 hours before the vessel enters or departs the regulated navigation area and at least 12 hours before the vessel moves within the regulated navigation area. The notice must include a report of the vessel's propulsion and machinery status and, for foreign flag vessels, the notice must include any outstanding deficiencies identified by the vessel's flag state or classification society;

(1926) (2) Not enter, get or remain underway within the regulated navigation area if visibility is or is expected to be less than two (2) miles. If during the transit visibility becomes less than two (2) miles, the vessel must seek safe anchorage and notify the COTP immediately;

(1927) (3) Not anchor in any area within the regulated navigation area unless in times of emergency or with COTP permission;

(1928) (4) Not transfer dangerous cargo while the vessel is at anchor or bunkering;

(1929) (5) Maintain a manned watch in the steering compartment whenever the vessel is underway within the regulated navigation area unless the vessel has two separate and independent steering control systems with duplicate pilothouse steering gear control systems which meet the requirements of 46 CFR 58.25-70.

(1930) (6) When anchored within the regulated navigation area and:

(1931) (i) Sustained winds are greater than 25 knots but less than 40 knots, ensure the main engines are ready to provide full power in five minutes or less; and

(1932) (ii) Sustained winds are 40 knots or over, ensure that the main engines are on line to immediately provide propulsion;

(1933) (7) While moored within the regulated navigation area, ensure that at least two wire cable mooring lines (firewarps) are rigged and ready for use as emergency towing hookups fore and aft on the outboard side of the vessel;

(1934) (8) While underway or anchored within the regulated navigation area, ensure that at least two wire cable mooring lines (firewarps) are rigged and ready for use as emergency towing hookups fore and aft on the vessel; and,

(1935) (9) Proceed as directed by the COTP.

(1936) (g) Requirements for vessels operating in the vicinity of a vessel carrying dangerous cargoes. (1) Except for a vessel that is attending a vessel carrying dangerous cargo with permission from the master of the vessel carrying dangerous cargo or a vessel that is anchored or moored at a marina, wharf, or pier, and which remains moored or at anchor, no vessel may, without the permission of the COTP:

(1937) (i) Come or remain within 500 yards of the port or starboard side or within 1,000 yards of the bow or stern of an underway vessel that is carrying dangerous cargo; or

(1938) (ii) Come or remain within 100 yards of a moored or anchored vessel carrying dangerous cargo.

(1939) (2) The master, owner, or operator of any vessel receiving permission under paragraph (g)(1) of this section shall;

(1940) (i) Maintain a continuous radio guard on VHF–FM channels 13 and 16;

(1941) (ii) Operate at "no wake" speed or the minimum speed needed to maintain steerage; and

(1942) (iii) Proceed as directed by the COTP.

(1943) (3) No vessel may overtake a vessel carrying dangerous cargoes unless the overtaking can be completed before reaching any bend in the channel. Before any overtaking, the pilots, masters or operators of both the overtaking vessel and the vessel being overtaken must clearly agree on the circumstances of the overtaking, including vessel speeds, time and location of overtaking.

(1944) (h) Additional restrictions above the C&D Canal. When operating on the Delaware River above the C&D Canal:

(1945) (1) A vessel carrying dangerous cargo must be escorted by at least one commercial tug; and

(1946) (2) Meeting situations shall be avoided on river bends to the maximum extent possible.

(1947) (i) The COTP will issue a Broadcast Notice to Mariners to inform the marine community of scheduled vessel movements during which the restrictions imposed by paragraphs (g) and (h) of this section will be in effect.

§165.511 Security Zone; Atlantic Ocean, Chesapeake & Delaware Canal, Delaware Bay, Delaware River and its tributaries.

(1948) (a) Location. A 500-yard radius around escorted passenger vessels in the Captain of the Port, Delaware Bay zone as defined in 33 CFR 3.25-05.

(1949) (b) Regulations. (1) All persons are required to comply with the general regulations governing security zones in §165.33 of this part.

(1950) (2) All persons or vessels operating at the minimum safe speed necessary to maintain navigation may transit within 500 yards of an escorted passenger vessel without the permission of the Captain of the Port Philadelphia, PA or designated representative while the escorted passenger vessel is in the Captain of the Port Delaware Bay zone.

(1951) (3) No person or vessel may transit or remain within 100 yards of an escorted passenger vessel without the permission of the Captain of the Port Philadelphia, PA or designated representative while the passenger vessel is in the Captain of the Port Philadelphia zone.

(1952) (4) Any person or vessel authorized to enter the security zone must operate in strict conformance with any directions given by the Captain of the Port, Delaware Bay or designated representative and leave the security zone immediately if the Captain of the Port Philadelphia, PA or designated representative so orders.

(1953) (5) When an escorted passenger vessel approaches within 100 yards of any vessel that is moored or anchored, the stationary vessel must stay moored or anchored while it remains within 100 yards of the passenger vessel unless it is either ordered by or given permission by the Captain of the Port, Delaware Bay or designated representative to do otherwise.

(1954) (6) The Coast Guard designated representative enforcing this section can be contacted on VHF Marine Band Radio, channels 13 and 16. The Captain of the Port can be contacted at 215–271–4807.

(1955) (c) Maneuver-restricted vessels. When conditions permit, the Captain of the Port or designated representative should:

(1956) (1) Permit vessels constrained by their navigational draft or restricted in their ability to maneuver to pass within the 100 yards of the passenger vessel in order to ensure safe passage in accordance with the Navigation Rules as seen in 33 CFR chapter I, subchapters D and E; and

(1957) (2) Permit vessels constrained by their navigational draft or restricted in their ability to maneuver that must transit via a navigable channel or waterway to pass within 100 yards of an anchored passenger vessel.

(1958) (d) Definitions. As used in this section–

(1959) Captain of the Port means the Commanding Officer of the Coast Guard Sector Delaware Bay or any Coast Guard commissioned, warrant, or petty officer who has been authorized by the Captain of the Port to act as a designated representative on his behalf.

(1960) Escort means assets (surface or air) with the Coast Guard insignia that accompany and protect the escorted vessel, armed with crew-served weapons that are manned and ready.

(1961) Passenger Vessels means vessels greater than 100 feet in length, over 100 gross tons that are authorized to carry 500 or more passengers, making voyages lasting more than 24 hours, except for ferries.

§165.518 Security Zone; Waters of the Fifth Coast Guard District.

(1962) (a) Definitions. As used in this section–

(1963) 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.

(1964) 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:

(1965) (1) Coast Guard surface or air asset displaying the Coast Guard insignia.

(1966) (2) Coast Guard Auxiliary surface asset displaying the Coast Guard Auxiliary insignia.

(1967) (3) State and/or local law enforcement asset displaying the applicable agency markings and or equipment associated with the agency.

(1968) State and/or local law enforcement officers means any State or local government law enforcement officer who has authority to enforce State criminal laws.

(1969) (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.

(1970) (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.

(1971) (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.

(1972) (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.

(1973) (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 or ensure safe passage in

accordance with the Navigation Rules in 33 CFR chapter I, subparts D and E.

(1974) (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.

(1975) (6) When moored, a security zone around an escorted vessel may also be enforced by Coast Guard, State or Local law enforcement personnel shoreside.

(1976) (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:

(1977) Philadelphia: 215–271–4807

(1978) Baltimore: 410–576–2693

(1979) Hampton Roads: 757–668–5555 or 757–484–8192

(1980) Wilmington: 910–772–2200 or 910–254–1500

(1981) (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.

§165.552 Security Zone; Oyster Creek Generation Station, Forked River, Ocean County, New Jersey.

(1982) (a) Location. The following area is a security zone: Starting at the south branch of the Forked River in the vicinity of the Oyster Creek Generation Station, bounded by a line beginning at

(1983) 39°49'12.0"N., 074°12'13.0"W.; thence to

(1984) 39°48'39.7"N., 074°12'0"W.; along the shoreline, thence to

(1985) 39°48'40.0"N., 074°12'0.3"W.; thence to

(1986) 39°49'11.8"N., 074°12'10.5"W.; thence back along the shoreline to the beginning point. All coordinates reference Datum: NAD 1983.

(1987) (b) Regulations. (1) All persons are required to comply with the general regulations governing security zones in §165.33 of this part.

(1988) (2) No person or vessel may enter or navigate within this security zone unless authorized to do so by the Coast Guard or designated representative. Any person or vessel authorized to enter the security zones must operate in strict conformance with any directions given by the Coast Guard or designated representative and leave the security zone immediately if the Coast Guard or designated representative so orders.

(1989) (3) The Coast Guard or designated representative enforcing this section can be contacted on VHF Marine Band Radio, channels 13 and 16. The Captain of the Port can be contacted at 215–271–4807.

(1990) (4) The Captain of the Port will notify the public of any changes in the status of this security zone by Marine Safety Radio Broadcast on VHF–FM marine band radio, channel 22 (157.1 MHz).

(1991) (c) Definitions. For the purposes of this section, Captain of the Port means the Commanding Officer of the Coast Guard sector Delaware Bay or any Coast Guard commissioned, warrant, or petty officer who has been authorized by the Captain of the Port to act as a designated representative on his behalf.

§165.553 Security Zone; Salem and Hope Creek Generation Stations, Delaware River, Salem County, New Jersey.

(1992) (a) Location. The following area is a security zone: the waters of the Delaware River in the vicinity of the Salem and Hope Creek Generation Stations bounded by a line drawn from a point located at

(1993) 39°28'08.0"N., 075°32'31.7"W. to

(1994) 39°28'06.5"N., 075°32'47.4"W., thence to

(1995) 39°27'28.4"N., 075°32'15.8"W., thence to

(1996) 39°27'28.8"N., 075°31'56.6"W., thence to

(1997) 39°27'39.9"N., 075°31.51.6"W., thence along the shoreline to the point of

(1998) 39°28'08.0"N., 075°32'31.7"W. All coordinates reference Datum: NAD 1983.

(1999) (b) Regulations. (1) All persons are required to comply with the general regulations governing security zones in §165.33 of this part.

(2000) (2) No person or vessel may enter or navigate within this security zone unless authorized to do so by the Coast Guard or designated representative. Any person or vessel authorized to enter the security zones must operate in strict conformance with any directions given by the Coast Guard or designated representative and leave the security zone immediately if the Coast Guard or designated representative so orders.

(2001) (3) The Coast Guard or designated representative enforcing this section can be contacted on VHF Marine Band Radio, channels 13 and 16. The Captain of the Port can be contacted at 215–271–4807.

(2002) (4) The Captain of the Port will notify the public of any changes in the status of this security zone by Marine Safety Radio Broadcast on VHF–FM marine band radio, channel 22 (157.1 MHz).

(2003) (c) Definitions. For the purposes of this section, Captain of the Port means the Commanding Officer of the Coast Guard Sector Delaware Bay, or any Coast Guard commissioned, warrant, or petty officer who has been authorized by the Captain of the Port to act as a designated representative on his behalf.

§165.555 Safety Zone; Delaware River.

(2004) (a) Definition. As used in this section, Captain of the Port means the Commander of Sector Delaware Bay or any Coast Guard commissioned, warrant or petty officer who has been authorized by the Captain of the Port to act on his behalf. The Captain of the Port may be contacted by telephone at 215–271–4807 or via VHF marine band radio, channel 16.

(2005) (b) Location. The following area is a safety zone: All waters located within a 150-yard radius around the

dredging operation and barge, conducting dredging operations in or near the Marcus Hook Range in the vicinity of Anchorage 7.

(2006) (c) Enforcement. This safety zone will be enforced annually beginning on September 1 through December 31.

(2007) (d) Regulations.

(2008) (1) All persons are required to comply with the general regulations governing safety zones in 33 CFR 165.23 of this part.

(2009) (2) All Coast Guard vessels enforcing this safety zone or watch officers aboard the Dredge and Barge can be contacted on VHF marine band radio, channel 16. The Captain of the Port may be contacted by telephone at 215–271–4807 or via VHF marine band radio, channel 16.

§165.556 Regulated Navigation Area; Chesapeake and Delaware Canal, Chesapeake City Anchorage Basin, MD.

(2010) (a) Location. The following area is a regulated navigation area: All waters of the Chesapeake and Delaware (C&D) Canal within the anchorage basin at Chesapeake City, Maryland, bounded by a line drawn across the entrance to the basin from position

(2011) 39°31'39.6"N., 075°48'36.5"W., to position

(2012) 39°31'40.6"N., 075°48'43.3"W. All coordinates refer to NAD 1983.

(2013) (b) Definitions. For the purposes of this section:

(2014) District Commander means the Commander, Fifth Coast Guard District or any Coast Guard commissioned, warrant, or petty officer who has been authorized by the Commander, Fifth Coast Guard District, to act on his or her behalf, or his or her designated representative.

(2015) (c) Regulations. The general regulations governing regulated navigation areas, found in 33 CFR 165.13, apply to the regulated navigation area described in paragraph (a) of this section.

(2016) (1) All vessels and persons are prohibited from entering and accessing this regulated navigation area, except as authorized by the District Commander or his or her designated representative.

(2017) (2) Persons or vessels requiring entry into or passage within the regulated navigation area must request authorization from the District Commander or his or her designated representative, by telephone at 410–576–2693 or by marine band radio on VHF–FM Channel 16 (156.8 MHz), from 12:01 a.m. until 11:59 p.m. on the last Saturday in June, annually. All Coast Guard vessels enforcing this regulated navigation area can be contacted on marine band radio VHF–FM Channel 16 (156.8 MHz).

(2018) (3) The operator of any vessel entering or located within this navigation area shall:

(2019) (i) Travel at no-wake speed,

(2020) (ii) 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, and

(2021) (iii) Proceed as directed by any commissioned, warrant or petty officer on board a vessel displaying a Coast Guard Ensign.

(2022) (4) All vessels and persons within this regulated navigation area must comply with any additional instructions of the District Commander or the designated representative.

(2023) (d) Enforcement. The U.S. Coast Guard may be assisted in the patrol and enforcement of the regulated navigation area by any Federal, State, and local agencies.

(2024) (e) Enforcement period. This section will be enforced from 12:01 a.m. until 11:59 p.m. on the last Saturday in June, annually.

Subpart G–Protection of Naval Vessels

§165.2010 Purpose.

(2025) 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.

(2026) The following definitions apply to this subpart:

(2027) Atlantic Area means that area described in 33 CFR 3.04–1 Atlantic Area.

(2028) Large U.S. naval vessel means any U.S. naval vessel greater than 100 feet in length overall.

(2029) Naval defensive sea area means those areas described in 32 CFR part 761.

(2030) 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.

(2031) Navigable waters of the United States means those waters defined as such in 33 CFR part 2.

(2032) Navigation rules means the Navigation Rules, International-Inland.

(2033) 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.

(2034) Pacific Area means that area described in 33 CFR 3.04–3 Pacific Area.

(2035) Restricted area means those areas established by the Army Corps of Engineers and set out in 33 CFR part 334.

(2036) 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.

(2037) 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.

(2038) 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.

(2039) (a) Coast Guard. Any Coast Guard commissioned, warrant or petty officer may enforce the rules and regulations contained in this subpart.

(2040) (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.

(2041) (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.

(2042) **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.

(2043) (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.

(2044) (c) The Navigation Rules shall apply at all times within a naval vessel protection zone.

(2045) (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.

(2046) (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.

(2047) (f) When conditions permit, the Coast Guard, senior naval officer present in command, or the official patrol should:

(2048) (1) Give advance notice on VHF–FM channel 16 of all large U.S. naval vessel movements;

(2049) (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

(2050) (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

(2051) (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.

(2052) **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 166–Shipping Safety Fairways

Subpart A–General

§166.100 Purpose.

(2053) The purpose of these regulations is to establish and designate shipping safety fairways and fairway anchorages to provide unobstructed approaches for vessels using U.S. ports.

§166.103 Geographic coordinates.

(2054) 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.

§166.105 Definitions.

(2055) (a) Shipping safety fairway or fairway means a lane or corridor in which no artificial island or fixed structure, whether temporary or permanent, will be permitted. Temporary underwater obstacles may be permitted under certain conditions described for specific areas in Subpart B. Aids to navigation approved by the U.S. Coast Guard may be established in a fairway.

(2056) (b) Fairway anchorage means an anchorage area contiguous to and associated with a fairway, in which fixed structures may be permitted within certain spacing limitations, as described for specific areas in Subpart B.

§166.110 Modification of areas.

(2057) Fairways and fairway anchorages are subject to modification in accordance with 33 U.S.C. 1223(c); 92 Stat. 1473.

Subpart B–Designation of Fairways and Fairway Anchorages (in part)

§166.500 Areas along the Atlantic Coast.

(2058) (a) Purpose. Fairways, as described in this section are established to control the erection of structures therein to provide safe vessel routes along the Atlantic Coast.

(2059) (b) Designated areas.–

(2060) (1) Off New York Shipping Safety Fairway.

(2061) (i) Ambrose to Nantucket Safety Fairway. The area enclosed by rhumb lines, (North American Datum of 1927 (NAD–27)), joining points at:

(2062) 40°32'20"N., 73°04'57"W.
(2063) 40°30'58"N., 72°58'25"W.
(2064) 40°34'07"N., 70°19'23"W.
(2065) 40°35'37"N., 70°14'09"W.
(2066) 40°30'37"N., 70°14'00"W.
(2067) 40°32'07"N., 70°19'19"W.
(2068) 40°28'58"N., 72°58'25"W.
(2069) 40°27'20"N., 73°04'57"W.

(2070) (ii) Nantucket to Ambrose Safety Fairway. The area enclosed by rhumb lines, NAD–27, joining points at:

(2071) 40°24'20"N., 73°04'58"W.
(2072) 40°22'58"N., 72°58'26"W.
(2073) 40°26'07"N., 70°19'09"W.
(2074) 40°27'37"N., 70°13'46"W.
(2075) 40°22'37"N., 70°13'36"W.
(2076) 40°24'07"N., 70°19'05"W.
(2077) 40°20'58"N., 72°58'26"W.
(2078) 40°19'20"N., 73°04'58"W.

Part 167–Offshore Traffic Separation Schemes

Subpart A–General

§167.1 Purpose.

(2079) 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.

(2080) Geographic coordinates are defined using North American 1927 Datum (NAD 27) unless indicated otherwise.

§167.5 Definitions.

(2081) (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.

(2082) (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.

(2083) (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.

(2084) (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.

(2085) (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.

(2086) (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.

(2087) (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.

(2088) 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.

(2089) (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.

(2090) (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.

Atlantic East Coast

§167.150 Off New York Traffic Separation Scheme: General.

(2091) The specific areas in the Off New York Traffic Separation Scheme and Precautionary Areas are described in §§167.151, 167.152, 167.153, 167.154, and 167.155 of this chapter.

§167.151 Off New York: Precautionary areas.

(2092) (a) A circular precautionary area with a radius of 7 miles is established centered upon 40°27'30"N., 73°49'54"W.

(2093) (b) A precautionary area is established between the traffic separation scheme "Eastern Approach, off Nantucket" and the traffic separation scheme "In the Approach to Boston, Massachusetts."

(2094) (1) The precautionary area is bounded to the east by a circle of radius 15.5 miles, centered upon geographic position 40°35.00'N., 69°00.00'W., and is intersected by the traffic separation scheme "In the Approach to Boston, Massachusetts" and "Off New York" at the following geographic positions:

(2095) 40°50.33'N., 68°57.00'W.

(2096) 40°23.75'N., 69°14.63'W.

(2097) (2) The precautionary area is bounded to the west by a line connecting the two traffic separation schemes between the following geographic positions:

(2098) 40°36.75'N., 68°15.16'W.

(2099) 40°48.00'N., 69°03.33'W.

§167.152 Off New York: Eastern approach, off Nantucket.

(2100) (a) A separation zone is established bounded by a line connecting the following geographic positions:

(2101) 40°28.75'N., 69°14.83'W.

(2102) 40°27.62'N., 70°13.77'W.

(2103) 40°30.62'N., 70°14.00'W.

(2104) 40°31.75'N., 69°14.97'W.

(2105) (b) A traffic lane for westbound traffic is established between the separation zone and a line connecting the following geographic positions:

(2106) 40°36.75'N., 69°15.17'W.

(2107) 40°35.62'N., 70°15.15'W.

(2108) (c) A traffic lane for eastbound traffic is established between the separation zone and a line connecting the following geographic positions:

(2109) 40°22.62'N., 70°13.60'W.

(2110) 40°23.75'N., 69°14.63'W.

§167.153 Off New York: Eastern approach.

(2111) (a) A separation zone is established bounded by a line connecting the following geographic positions:

(2112) 40°24.33'N., 73°04.97'W.

(2113) 40°24.20'N., 73°11.50'W.

(2114) 40°26.00'N., 73°40.93'W.

(2115) 40°27.00'N., 73°40.75'W.

(2116) 40°27.20'N., 73°11.50'W.

(2117) 40°27.33'N., 73°04.95'W.

(2118) (b) A traffic lane for westbound traffic is established between the separation zone and a line connecting the following geographic positions:

(2119) 40°32.33'N., 73°04.95'W.

(2120) 40°32.20'N., 73°11.50'W.

(2121) 40°28.00'N., 73°40.73'W.

(2122) (c) A traffic lane for eastbound traffic is established between the separation zone and a line connecting the following geographic positions:

(2123) 40°25.05'N., 73°41.32'W.

(2124) 40°19.20'N., 73°11.50'W.

(2125) 40°19.33'N., 73°04.97'W.

§167.154 Off New York: South-eastern approach.

(2126) (a) A separation zone is established bounded by a line connecting the following geographic positions:

(2127) 40°03.10'N., 73°17.93'W.

(2128) 40°06.50'N., 73°22.73'W.

(2129) 40°22.45'N., 73°43.55'W.

(2130) 40°23.20'N., 73°42.70'W.

(2131) 40°08.72'N., 73°20.10'W.

(2132) 40°05.32'N., 73°15.28'W.

(2133) (b) A traffic lane for northwest-bound traffic is established between the separation zone and a line connecting the following geographic positions:
(2134) 40°08.98'N., 73°10.87'W.
(2135) 40°12.42'N., 73°15.67'W.
(2136) 40°24.02'N., 73°41.97'W.
(2137) (c) A traffic lane for southeast-bound traffic is established between the separation zone and a line connecting the following geographic positions:
(2138) 40°21.82'N., 73°44.55'W.
(2139) 40°02.80'N., 73°27.15'W.
(2140) 39°59.43'N., 73°22.35'W.

§167.155 Off New York: Southern approach.

(2141) (a) A separation zone is established bounded by a line connecting the following geographic positions:
(2142) 39°45.70'N., 73°48.00'W.
(2143) 40°20.63'N., 73°48.33'W.
(2144) 40°20.87'N., 73°47.07'W.
(2145) 39°45.70'N., 73°44.00'W.
(2146) (b) A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographic positions:
(2147) 39°45.70'N., 73°37.70'W.
(2148) 40°21.25'N., 73°45.85'W.
(2149) (c) A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographic positions:
(2150) 40°20.53'N., 73°49.65'W.
(2151) 39°45.70'N., 73°54.40'W.

§167.170 Off Delaware Bay Approach Traffic Separation Scheme: General.

(2152) The Off Delaware Bay Traffic Separation Scheme consists of an Eastern approach, a South-eastern approach, a Two-Way Traffic Route, and a Precautionary Area. The specific areas of the Off Delaware Bay Traffic Separation Scheme and precautionary Area are described in §167.171, §167.172, §167.173, and §167.174 of this chapter.

§167.171 Eastern approach.

(2153) (a) A separation zone is established bounded by a line connecting the following points:
(2154) 38°46'18"N., 74°34'27"W.
(2155) 38°46'20"N., 74°55'45"W.
(2156) 38°47'27"N., 74°55'24"W.
(2157) 38°47'21"N., 74°34'30"W.
(2158) (b) A traffic lane for westbound traffic is established between the northen side of the separation zone and a line connecting the following points:
(2159) 38°48'19"N., 74°55'18"W.
(2160) 38°49'48"N., 74°34'36"W.
(2161) (c) A traffic lane for eastbound traffic is established between the south side of the separation zone and a line connecting the following points:
(2162) 38°45'27"N., 74°56'12"W.
(2163) 38°44'27"N., 74°34'21"W.

§167.172 Southeastern approach.

(2164) (a) A separation zone is established bounded by a line connecting the following points:
(2165) 38°27'00"N., 74°42'18"W.
(2166) 38°43'24"N., 74°58'00"W.
(2167) 38°44'12"N., 74°57'12"W.
(2168) 38°27'36"N., 74°41'18"W.
(2169) (b) A traffic lane for north-westbound traffic is established between the northeastern side of the separation zone and a line connecting the following points:
(2170) 38°28'48"N., 74°39'18"W.
(2171) 38°45'06"N., 74°56'36"W.
(2172) (c) A traffic lane for south-eastbound traffic is established between the southwestern side of the separation zone and a line connecting the following points:
(2173) 34°42'48"N., 74°58'54"W.
(2174) 34°27'00"N., 74°45'24"W.

§167.173 The Two-Way Traffic Route.

(2175) The Two-Way Traffic Route is established bounded on the west and south by a line connecting the following points:
(2176) 38°50'45"N., 75°03'24"W.
(2177) 38°47'30"N., 75°01'48"W.
(2178) 38°48'19"N., 74°55'18"W.
(2179) 38°50'12"N., 74°49'44"W.
(2180) 38°00'00"N., 74°40'14"W. and, bounded on the east and north by a line connecting the following points:
(2181) 39°00'00"N., 74°41'00"W.
(2182) 38°50'29"N., 74°50'18"W.
(2183) 38°48'48"N., 74°55'15"W.
(2184) 38°48'20"N., 74°59'18"W.
(2185) 38°49'06"N., 75°01'39"W.
(2186) 38°51'16"N., 75°02'50"W.

§167.174 Off Delaware Bay: Precautionary area.

(2187) A precautionary area is established as follows: from
(2188) 38°42'48"N., 74°58'54"W.; thence northerly by an arc of eight nautical miles centered at
(2189) 38°48'54"N., 75°05'36"W.; to
(2190) 38°48'19"N., 74°55'18"W.; thence westerly to
(2191) 38°47'30"N., 75°01'48"W.; thence northerly to
(2192) 38°50'45"N., 75°03'24"W.; thence northeasterly to
(2193) 38°51'16"N., 75°02'50"W.; thence northerly to
(2194) 38°54'48"N., 75°01'36"W.; thence westerly by an arc of 6.7 nautical miles centered at
(2195) 38°48'54"N., 75°05'36"W. to
(2196) 38°55'32"N., 75°05'52"W.; thence southwesterly to
(2197) 38°54'00"N., 75°08'00"W.; thence southerly to
(2198) 38°46'36"N., 75°03'33"W.; thence southeasterly to
(2199) 38°42'48"N., 74°58'54"W.

§167.200 In the approaches to Chesapeake Bay Traffic Separation Scheme: General.

(2200) (a) The traffic separation scheme in the approaches to Chesapeake Bay consists of three parts: a Precautionary Area, an Eastern Approach, and a Southern Approach. The Southern Approach consists of inbound

and outbound lanes for vessels drawing 12.8 meters (42 feet) of fresh water or less, separated by a deep-water (DW) route for inbound and outbound vessels with drafts exceeding 12.8 meters (42 feet) in fresh water and for naval aircraft carriers. Each part is defined geographically, using North American Datum 1983 (NAD 83), in §§167.201, 167.202, 167.203.

(2201) (b) All vessels approaching the Traffic Separation Scheme in the Approaches to Chesapeake Bay should use the appropriate inbound or outbound traffic lane.

§167.201 In the approaches to Chesapeake Bay: Precautionary area.

(2202) A precautionary area is established bounded by a circle with a two-mile radius, centered on the following geographic position:

(2203) 36°56.13'N., 75°57.45'W.

§167.202 In the approaches to Chesapeake Bay: Eastern approach.

(2204) (a) A separation line is established connecting the following geographic positions:

(2205) 36°57.50'N., 75°48.21'W.

(2206) 36°56.40'N., 75°52.40'W.

(2207) 36°56.40'N., 75°54.95'W.

(2208) (b) A traffic lane for westbound traffic is established between the separation line and a line connecting the following geographical positions:

(2209) 36°57.94'N., 75°48.41'W.

(2210) 36°56.90'N., 75°52.40'W.

(2211) 36°56.90'N., 75°55.14'W.

(2212) (c) A traffic lane for eastbound traffic is established between the separation line and a line connecting the following geographical positions:

(2213) 36°57.04'N., 75°48.01'W.

(2214) 36°55.88'N., 75°52.40'W.

(2215) 36°55.88'N., 75°54.95'W.

§167.203 In the approaches to Chesapeake Bay: Southern approach.

(2216) (a) A separation line connects the following geographical positions:

(2217) 36°50.33'N., 75°46.29'W.

(2218) 36°52.90'N., 75°51.52'W.

(2219) 36°55.96'N., 75°54.97'W.

(2220) (b) A separation line connects the following geographical positions:

(2221) 36°55.11'N., 75°55.23'W.

(2222) 36°52.35'N., 75°52.12'W.

(2223) 36°49.70'N., 75°46.80'W.

(2224) (c) A separation line connects the following geographic positions:

(2225) 36°49.52'N., 75°46.94'W.

(2226) 36°52.18'N., 75°52.29'W.

(2227) 36°54.97'N., 75°55.43'W.

(2228) (d) A separation line connects the following geographical positions:

(2229) 36°54.44'N., 75°56.09'W.

(2230) 36°51.59'N., 75°52.92'W.

(2231) 36°48.87'N., 75°47.42'W.

(2232) (e) A traffic lane for inbound traffic is established between the separation lines described in paragraphs (a) and (b) of this section.

(2233) (f) A traffic lane for outbound traffic is established between the separation lines described in paragraphs (c) and (d) of this section.

(2234) (g) A deep-water route is established between the separation lines described in paragraphs (b) and (c) of this section. The following vessels should use the deep-water route established in paragraph (g) of this section when bound for Chesapeake Bay from sea or to sea from Chesapeake Bay;

(2235) (1) Deep draft vessels (drafts greater than 13.5 meters/45 feet in fresh water); and

(2236) (2) Naval aircraft carriers.

(2237) (h) It is recommended that a vessel using the deep-water route established in paragraph (g) of this section–

(2238) (1) Announce its intention on VHF–FM Channel 16 as it approaches Chesapeake Bay Southern Approach Lighted Whistle Buoy CB on the south end, or Chesapeake Bay Junction Lighted Buoy CBJ on the north end of the route;

(2239) (2) Avoid, as far as practicable, overtaking other vessels operating in the deep-water route; and

(2240) (3) Keep as near to the outer limit of the route which lies on the vessel's starboard side as is safe and practicable.

(2241) (i) Vessels other than those listed in paragraph (d) of this section should not use the deep-water route.

Part 169–Ship Reporting Systems

Subpart A–General

169.1 What is the purpose of this subpart?

(2242) 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?

(2243) As used in this part–

(2244) Administration means the Government of the State whose flag the ship is entitled to fly.

(2245) Cargo ship means any ship which is not a passenger ship.

(2246) Flag Administration means the Government of a State whose flag the ship is entitled to fly.

(2247) Gross tonnage means tonnage as defined under the International Convention on Tonnage Measurement of Ships, 1969 (Incorporated by reference, see §169.15).

(2248) Gross tons means vessel tonnage measured in accordance with the method utilized by the flag state administration of that vessel.

(2249) 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.

(2250) High speed passenger craft means a high speed craft carrying more than 12 passengers.

(2251) 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.

(2252) Long range identification and tracking (LRIT) information or position report means a report containing the following information:

(2253) (1) The identity of the ship;

(2254) (2) The position of the ship (latitude and longitude); and

(2255) (3) The date and time of the position provided.

(2256) 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.

(2257) 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.

(2258) Mobile offshore drilling unit means a self-propelled vessel capable of engaging in drilling operations for the exploration or exploitation of subsea resources.

(2259) Passenger ship means a ship that carries more than 12 passengers.

(2260) Self-propelled ships means ships propelled by mechanical means.

(2261) Shore-based authority means the government appointed office or offices that will receive the reports made by ships entering each of the mandatory 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.

(2262) 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?

(2263) 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?

(2264) (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.

(2265) (b) International Electrotechnical Commission (IEC) Bureau Central de la Commission Electrotechnique Internationale, 3 rue de Varembé, P.O. Box 131, 1211 Geneva 20, Switzerland.

(2266) (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.

(2267) (2) [Reserved]

(2268) (c) International Maritime Organization (IMO), 4 Albert Embankment, London SE1 7SR, U.K.

(2269) (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.

(2270) (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.

(2271) (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.

(2272) (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.

(2273) (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 North Atlantic Right Whales

§169.100 What mandatory ship reporting systems are established by this subpart?

(2274) 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.

(2275) **Note:** 50 CFR 224.103(c) contains requirements and procedures concerning North Atlantic right whale approach limitations and avoidance procedures.

§169.102 Who is the shore-based authority?

(2276) 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?

(2277) 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

(2278) 42°39'N, 70°37'W; then northeast to

(2279) 42°45'N, 70°13'W; then southeast to

(2280) 42°10'N, 68°31'W; then south to

(2281) 41°00'N, 68°31'W; then west to

(2282) 41°00'N, 69°17'W; then northwest to

(2283) 42°05'N, 70°02'W; then west to

(2284) 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

(2285) 42°39'N, 70°37'W.

169.110 When is the northeastern reporting system in effect?

(2286) The mandatory ship reporting system in the northeastern United States operates year-round.

169.115 Where is the southeastern reporting system located?

(2287) 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 80°51.6'W. with the southern and northern boundaries at 30°00'N. and 31°27'N., respectively.

§169.120 When is the southeastern reporting system in effect?

(2288) 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?

(2289) 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?

(2290) 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?

(2291) (a) A ship equipped with INMARSAT C must report in IM0 standard format as provided in §169.140 in table 169.140.

(2292) (b) A ship not equipped with INMARSAT C must report to the Coast Guard using other means, listed below in order of precedence–

(2293) (1) Narrow band direct printing (SITOR).

(2294) (2) HF voice communication, or

(2295) (3) MF or VHF voice communications.

(2296) (c) SITAR or HF reports made directly to the Coast Guard's Communications Area Master Station Atlantic (CAMSLANT) in Chesapeake, VA, or MF or VHF reports 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?

(2297) 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.

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.

Subpart C–Transmission of Long Range Identification and Tracking Information

§169.200 What is the purpose of this subpart?

(2298) 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)?

(2299) The following ships, while engaged on an international voyage, are required to transmit position reports:

(2300) (a) A passenger ship, including high speed passenger craft.

(2301) (b) A cargo ship, including high speed craft, of 300 gross tonnage or more.

(2302) (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?

(2303) 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.

(2304) (a) Flag State relationship. A U.S. flag ship engaged on an international voyage must transmit position reports wherever they are located.

(2305) (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.

(2306) (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?

(2307) 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?

(2308) A ship identified in §169.205 must be equipped with LRIT equipment–

(2309) (a) Before getting underway, if the ship is constructed on or after December 31, 2008.

(2310) (b) By the first survey of the radio installation after December 31, 2008, if the ship is–

(2311) (1) Constructed before December 31, 2008, and

(2312) (2) Operates within–

(2313) (i) One hundred (100) nautical miles of the United States baseline, or

(2314) (ii) Range of an Inmarsat geostationary satellite, or other Application Service Provider recognized by the Administration, with continuous alerting is available.

(2315) (c) By the first survey of the radio installation after July 1, 2009, if the ship is–

(2316) (1) Constructed before December 31, 2008, and

(2317) (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?

(2318) 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?

(2319) 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?

(2320) A ship is exempt from this subpart if it is–

(2321) (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,

(2322) (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

(2323) (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?

(2324) 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?

(2325) (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.

(2326) (b) The master must also make an entry in the ship's logbook that states–

(2327) (1) His or her reason for switching the LRIT equipment off, or an entry that the equipment has failed to operate, and

(2328) (2) The period during which the LRIT equipment was switched off or non-operational.

(2329) 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

§207.100 Inland Waterway from Delaware River to Chesapeake Bay, Delaware and Maryland (Chesapeake and Delaware Canal); use, administration, and navigation.

(2330) These regulations are given in the description of the canal in chapter 7 of this Coast Pilot.

§207.800 Collection of navigation statistics.

(2331) (a) Definitions. For the purpose of this regulation the following terms are defined:

(2332) (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.)

(2333) (2) Offenses and Violations mean:

(2334) (i) Failure to submit a required report.

(2335) (ii) Failure to provide a timely, accurate, and complete report.

(2336) (iii) Failure to submit monthly listings of idle vessels or vessels in transit.

(2337) (iv) Failure to submit a report required by the lockmaster or canal operator.

(2338) (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.

(2339) (4) Person or entity means an individual, corporation, partnership, or company.

(2340) (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.

(2341) (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.

(2342) (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: Company A is the barge owner, and the barge transports corn from Minneapolis, MN to New Orleans, LA, with fleeting at Cairo, IL.

(2343) (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.

(2344) (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.

(2345) (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.

(2346) (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.

(2347) (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.

(2348) (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:

(2349) (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.

(2350) (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.

(2351) (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.

(2352) (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:

(2353) (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.

(2354) (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.

(2355) (B) Vessels idle during the month must also be reported.

(2356) (C) Notwithstanding the above requirements, the following water-borne vessel movements need not be reported:

(2357) (1) Movements of recreational vessels.

(2358) (2) Movements of fire, police, and patrol vessels.

(2359) (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.

(2360) (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.

(2361) (5) Specific movements granted exemption in writing by the Waterborne Commerce Statistics Center.

(2362) (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.

(2363) (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.

(2364) (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).

(2365) (1) The name of the shipper of the commodity, and the shipper's Internal Revenue Service number or Social Security number, must be reported on the form.

(2366) (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.

(2367) (3) Refer to 19 CFR part 24 for detailed information on exemptions and ports subject to the Harbor Maintenance Tax.

(2368) (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.

(2369) (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.

(2370) (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.

(2371) (c) Penalties for Noncompliance. The following penalties for noncompliance can be assessed for offenses and violations.

(2372) (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.

(2373) (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.

(2374) (3) Denial of Passage. In addition to these fines, penalties, and imprisonments, the lockmaster or canal operator can refuse to allow vessel passage.

(2375) (d) Enforcement Policy. Every means at the disposal of the Army Corps of Engineers will be utilized to monitor and enforce these regulations.

(2376) (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.

(2377) (i) Data on purchase and sale of vessels.

(2378) (ii) U.S. Coast Guard vessel documentation and reports.

(2379) (iii) Data collected at Locks, Canals, and other facilities operated by the Corps.

(2380) (iv) Data provided by terminals on ENG Form 3926.

(2381) (v) Data provided by the other Federal agencies including the Internal Revenue Service, Customs Service, Maritime Administration, Department of Transportation, and Department of Commerce.

(2382) (vi) Data provided by ports, local facilities, and State or local governments.

(2383) (vii) Data from trade journals and publications.

(2384) (viii) Site visits and inspections.

(2385) (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.

(2386) (3) Administrative Assessment of Civil Penalties. Civil penalties may be assessed in the following manner.

(2387) (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.

(2388) (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.

(2389) (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.

(2390) (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.

(2391) The purpose of this part is to:

(2392) (a) Prescribe procedures for establishing, amending and disestablishing danger zones and restricted area;

(2393) (b) List the specific danger zones and restricted areas and their boundaries; and

(2394) (c) Prescribe specific requirements, access limitations and controlled activities within the danger zones and restricted areas.

§334.2 Definitions.

(2395) (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.

(2396) (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.

(2397) (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.

(2398) (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),

(2399) (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, 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.

(2400) (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:

(2401) (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.

(2402) (2) Name of waterway and if a small tributary, the name of a larger connecting waterbody.

(2403) (3) Name of closest city or town, county/parish and state.

(2404) (4) Location of proposed or existing danger zone or restricted area with a map showing the location, if possible.

(2405) (5) A brief statement of the need for the area, its intended use and detailed description of the times, dates and extent of restriction.

(2406) (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.

(2407) (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:

(2408) (i) Applicable statutory authority or authorities; (40 Stat. 266; 33 U.S.C. 1) and (40 Stat. 892; 33 U.S.C. 3).

(2409) (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.

(2410) (iii) The address of the District Engineer as the recipient of any comments received.

(2411) (iv) The identity of the applicant/proponent;

(2412) (v) The name or title, address and telephone number of the Corps employee from whom additional information concerning the proposal may be obtained;

(2413) (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.

(2414) (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:

(2415) (i) The Federal Aviation Administration (FAA) where the use of airspace is involved.

(2416) (ii) The Commander, Service Force, U.S. Atlantic Fleet, if a proposed action involves a danger zone off the U.S. Atlantic coast.

(2417) (iii) Proposed danger zones on the U.S. Pacific coast must be coordinated with the applicable commands as follows:

(2418) Alaska, Oregon and Washington:

(2419) Commander, Naval Base, Seattle

(2420) California:

(2421) Commander, Naval Base, San Diego

(2422) Hawaii and Trust Territories:

(2423) Commander, Naval Base, Pearl Harbor

(2424) (c) Public hearing. The District Engineer may conduct a public hearing in accordance with 33 CFR part 327.

(2425) (d) Environmental documentation. The District Engineer shall prepare environmental documentation in accordance with Appendix B to 33 CFR part 325.

(2426) (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**.

(2427) (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.

(2428) (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.

(2429) (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.

(2430) (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.

(2431) (b) For further information on NAD 83 and National Service nautical charts please contact:

(2432) Director, Coast Survey (N/CS2)

(2433) National Ocean Service, NOAA

(2434) 1315 East-West Highway, Station 6147

(2435) Silver Spring, MD 20910–3282.

§334.100 Atlantic Ocean off Cape May, NJ; Coast Guard Rifle Range.

(2436) (a) The danger zone. The waters of the Atlantic Ocean within an area described as follows: Beginning at Cape May West Jetty Light; thence 180° true, 800 yards; thence 250° true 1,325 yards; and thence 335° true to the shore line.

(2437) (b) The regulations. (1) No person or vessel shall enter or remain in the danger area between sunrise and sunset daily, except as authorized by the enforcing agency.

(2438) (2) The regulations in this section shall be enforced by the Commander, Third Coast Guard District, or his authorized representative.

§334.110 Delaware Bay off Cape Henlopen, DE; naval restricted area.

(2439) (a) The area. (1) Beginning at a point on the south shore of Delaware Bay at longitude 75°06'12"; thence to latitude 38°47'25", longitude 75°06'20"; thence to latitude 38°47'48", longitude 75°06'00"; thence to latitude 38°50'43", longitude 75°02'11"; thence to latitude 38°49'16", longitude 74°59'35"; thence to a point on the shore at latitude 38°46'09"; thence northwesterly and southwesterly along the shore at Cape Henlopen to the point of beginning.

(2440) (b) The regulations. (1) Anchoring, trawl fishing, crabbing, dragging, grappling, and towing with hawser on bottom are prohibited in the area and no object attached to a vessel shall be placed on or near the bottom.

(2441) (2) This section does not apply to anchored floating navigational aids or to placement or removal of such aids by the Coast Guard.

(2442) (3) This section does not apply to vessels engaged in commercial or pleasure boat fishing provided anchors, trawls, and ground tackle are not used.

(2443) (4) The regulations in this section shall be enforced by the Commandant, Fourth Naval District, and such agencies as he may designate.

§334.120 Delaware Bay off Milford Neck; naval aircraft bombing target area.

(2444) (a) The danger zone. A circular area of one nautical mile radius having its center in Delaware Bay at latitude 38°58'12", longitude 75°17'30".

(2445) (b) The regulations. (1) Anchoring, trawling, crabbing, fishing and dragging in the danger zone are prohibited during daylight hours.

(2446) (2) The regulations in this section shall be enforced by the Commandant, Fourth Naval District, and such agencies as he may designate.

§334.130 Atlantic Ocean off Wallops Island and Chincoteague Inlet, VA; danger zone.

(2447) (a) The area. An area immediately offshore from Wallops Island defined by lines drawn as follows: Beginning at

(2448) 37°51'30"N., 75°27'30"W.; thence to

(2449) 37°51'30"N., 75°17'12"W.; thence to

(2450) 37°43'18"N., 75°29'42"W.: and thence to

(2451) 37°49'18"N., 75°29'42"W.

(2452) (b) The regulations. (1) Persons and vessels may enter and operate in the danger zone at all times when warning signals are not displayed.

(2453) (2) When warning signals are displayed, all persons and vessels in the danger zone, except vessels entering or departing Chincoteague Inlet, shall leave the zone promptly by the shortest possible route and shall remain outside the zone until allowed by a patrol boat to enter or the dangers signal has been discontinued. Vessels entering or departing Chincoteague Inlet shall take the shortest passage possible through the danger zone upon display of the danger signal.

(2454) (3) The intent to conduct rocket-launching operations involving the area shall be indicated by a signal consisting of a large orange-colored, "blimp-shaped" balloon by day and a signal rotating alternately red and white beacon by night. The balloon shall be flown at latitude 37°50'38", longitude 75°28'47" and the beacon shall be displayed about 200 feet above mean high water at latitude 37°50'16", longitude 75°29'07". The appropriate one of these signals shall be displayed 30 minutes prior to rocket-launching time and shall remain displayed until danger no longer exists.

(2455) (4) The regulations in this section shall be enforced by the Director, Wallops Station, National Aeronautics and Space Administration, Wallops Island, VA, or such agencies as he may designate.

§334.140 Chesapeake Bay; United States Army Proving Ground Reservation, Aberdeen, MD.

(2456) (a) Restricted area defined. The following indicates the limits of the waters of or adjacent to the Aberdeen Proving Ground, Maryland, and inside of which boundaries will lie the restricted area known as the Aberdeen Proving Ground, Maryland.

(2457) (1) Beginning at a point on the westerly side of Chesapeake Bay, at the south side of the mouth of Swan Creek, Harford County, Maryland, the most northerly point of the reservation known as Plum Point; thence southeasterly along the low water mark on the shore of Chesapeake Bay to and across the north entrance of Spesutie Narrows to and thence along the low water mark on the north shore of Spesutie Island to Locust Point; thence along straight line from Locust Point to Turkey Point for a distance of approximately 1,400 yards; thence following a line parallel with and 1,000 yards from the low water mark on the easterly shore of Spesutie Island to a point 1,000 yards due southeast of Sandy Point; thence approximately southwest in a straight line to a point approximately 1,250 yards S. 10°30' W. from Bear Point; thence approximately 9,275 yards S. 51°04'W. to a point in Chesapeake Bay about 1,700 yards due east from Taylor Island Point; thence southwesterly in a straight course, except such variations as may be necessary to include all of Pooles Island to the southwesterly point of Pooles Island, thence in a northwesterly direction to the most southwesterly point of Spry Island, including all of Spry Island; thence northwesterly in a straight line to extreme southerly island off Lower Island Point; thence northwesterly in a straight line through Brier Point to a point in Seneca Creek where this line intersects a straight line which passes through monuments No. 124 and No. 125 on westerly part of Carroll Island; thence northeasterly in a straight line passing through Marshy Point, at the junction of Dundee Creek and Saltpeter Creek, to the intersection of the center line of Riordan Inlet with Gunpowder River, except such variations as may be necessary to exclude any and all parts of the point of land on the westerly side of Gunpowder River about one

mile south of Oliver Point; thence northerly along the center line of Riordan Inlet to its intersection with the southeasterly line of the right of way of the Pennsylvania Railroad; thence northeast along the Pennsylvania Railroad following the reservation boundary line to shore of Bush River, and along its western shore to Fairview Point; thence northeast in a straight line across Bush River to concrete monument No. 64, located on the eastern shore of Bush River, south of Chelsea; thence along the eastern shore of Bush River northerly to the mouth of Sod Run; thence by a broken line along the boundary of the reservation to Swan Creek; and thence in a straight line to Plum Point. (The above description may be traced on National Ocean Survey Chart No. 12273.)

(2458) (b) Authority delegated Commanding Officer. The Commanding Officer, Aberdeen Proving Ground, has been delegated the authority by the Secretary of the Army to designate from time to time by suitably posted bulletins or announcements, the conditions under which the public, including food fishermen and crabbers, may enter restricted waters of the Aberdeen Proving Ground.

(2459) (c) Penalty. All persons who enter the restricted waters, except as authorized in this section, without the authority of the Commanding Officer, Aberdeen Proving Ground MD, are under the terms of the information given above, guilty of a misdemeanor and upon conviction thereon are punishable by a fine not exceeding $500 or by imprisonment not exceeding 6 months.

(2460) (d) Entrance into restricted waters by the public.

(2461) (1) The following water areas are closed to the public at all times:

(2462) (i) Spesutie Narrows-all waters north and east of a line between Bear Point and Black Point;

(2463) (ii) All creeks except Landerick Creek;

(2464) (iii) The water adjacent to Carroll Island which lies between Brier Point and Lower Island Point also known as Hawthorne Cove;

(2465) (iv) The waters immediately off the mouth of Romney Creek;

(2466) (v) The waters adjacent to Abbey Point Recovery Field more accurately described as area number 16; depicted in Aberdeen Proving Ground Regulation 210–10, Appendix A.

(2467) (vi) The waters on the north side of the Bush River from Pond Point to Chelsea Chimney are closed for fishing purposes.

(2468) (2) The remainder of the restricted areas will normally be open for authorized use (including navigation and fishing) during the following hours:

(2469) (i) Monday through Thursday, 5 p.m. to 7:30 a.m.;

(2470) (ii) Weekends, 5 p.m. Friday to 7:30 a.m. Monday;

(2471) (iii) National (not State) holidays, 5 p.m. the day preceding the holiday to 7:30 a.m. the day following the holiday.

(2472) (3) When requirements of tests, as determined by the Commanding Officer, Aberdeen Proving Ground, or his designee, necessitate closing the restricted areas during the aforementioned times and days, the Commanding Officer, Aberdeen Proving Ground, will publish appropriate circulars or cause to be broadcast over local radio stations notices informing the public of the time and days which entrance to the restricted waters of Aberdeen Proving Ground by the general public will be prohibited.

(2473) (4) A fleet of patrol boats will be positioned at the perimeter of the restricted water zone boundaries (except in extreme weather conditions such as gales or ice) during periods of testing to prevent unauthorized entry. If necessary to attract attention of another vessel about to penetrate the restricted area, the patrol boat may operate a distinctive rotating blue and red light, public address system, and sound a siren, or by radio contact on shipshore FM channel 16 and citizen band channel 12. Buoys will mark the restricted waters along the Chesapeake Bay perimeter during the period, normally 4 June through 1 October annually.

(2474) (5) Authorized use. Authorized use as used in this section is defined as fishing from a vessel, navigation using a vessel to transverse a water area, or anchoring a vessel in a water area. Any person who touches any land, or docks or grounds a vessel, within the boundaries of Aberdeen Proving Ground, Maryland, is not using the area for an authorized use and is in violation of this regulation. Further, water skiing in the water area of Aberdeen Proving Ground is permitted as an authorized use when the water area is open for use by the general public provided that no water skier touches any land either dry land (fast land) or subaqueous land and comes no closer than 200 meters from any shoreline. Further, if any person is in the water area of Aberdeen Proving Ground, Maryland, outside of any vessel (except for the purposes of water skiing as outlined above) including, but not limited to, swimming, scuba diving, or other purpose, that person is not using the water in an authorized manner and is in violation of this regulation.

(2475) (e) Entry onto land and limitations of firing over land. (1) Entry onto any land, either dry land (fast land) or subaqueous land, within the boundaries of the Aberdeen Proving Ground Reservation as defined in paragraph (a)(1) is prohibited at all times. Provided, the Commander, Aberdeen Proving Ground, is authorized to grant exceptions to this regulation either by written permission or by local regulation. Entry onto the land is punishable as in paragraph (c) of this section.

(2476) (2) There are no limitations on test firing by Federal testing facilities at Aberdeen Proving Ground over land belonging to Aberdeen Proving Ground.

(2477) (f) Permits required from the Commanding Officer to set fixed nets in restricted waters. (1) Fishermen and crabbers desiring to set fixed nets within the restricted waters of Aberdeen Proving Ground Reservation are required in every instance to have a written permit. A fixed net for the purpose of this paragraph is defined as a pound net, staked gill net, hedge fike net, hoop net,

eel pot, crab pot, and all other types of nets fastened by means of poles, stakes, weights, or anchors. Permits to fish and crab within the restricted waters of Aberdeen Proving Ground may be obtained by written application to the Commanding Officer, Department of the Army, Aberdeen Proving Ground, Attention: Provost Marshall Division, Aberdeen Proving Ground, MD. Applicants for permits must state the location at which they desire to set fixed nets and state the period of time for which they desire the permit to cover. Nets placed in the restricted waters are subject to damage by gunfire and bombing, and the risk of such damage will be assumed by the holder of the permit.

(2478) (2) Holders of permits for setting fixed nets must comply with the provisions of this part and also with 33 CFR 206.50(d), not carried in this Pilot.

(2479) (g) Identification signs required at each location of fixed nets. Fishermen and crabbers who have been granted permits to fish or crab within the restricted waters of Aberdeen Proving Ground Reservation with fixed nets must at each location have a stake securely driven at the outer end of the line of nets on which is mounted a sign board which contains their name and permit number. All stakes set within the restricted area established by this regulation will project at least three (3) feet above the surface of the water at all ordinary high stages of the tide. Nets and other fishing and crabbing structures erected will be marked by stakes set at intervals not greater than fifty (50) feet. Fishing and crabbing structures erected in Aberdeen Proving Ground waters will be plainly marked on both ends, and will be lighted with a white light between sunset and sunrise, by and at the expense of the owner.

(2480) (h) Removal of pound net poles and or stakes. At the end of the fishing and crabbing season, fishermen and crabbers must remove and haul away from the location all pound nets, pots, poles or stakes used in their operation. Pound net poles or stakes must not be cast adrift after removal.

(2481) (i) Restrictions on fishermen and crabbers. It must be distinctly understood that holders of permits to fish or crab are not authorized to enter the restricted waters of Aberdeen Proving Ground Reservation outside the hours as announced by the Commanding Officer, Aberdeen Proving Ground. In addition, the privileges granted in this paragraph include no right to land nor to cut or procure pound nets poles or stakes on the Aberdeen Proving Ground Reservation.

(2482) (j) Aberdeen Proving Ground Regulations (APGR) 210–10 will govern commercial fishing and crabbing and APGR 210–26 will govern recreational (non-commercial) fishing and crabbing. This section shall be enforced by the Commander, Aberdeen Proving Ground, and such agencies as he/she may designate.

(2483) (k) Compliance with Federal, State and county laws required. The taking of fish and crabs in the waters of Aberdeen Proving Ground Reservation and the setting of and location of nets, in a manner not in compliance with Federal, State, and county laws is prohibited.

§334.150 Severn River at Annapolis, MD; experimental test area, U.S. Navy Marine Engineering Laboratory.

(2484) (a) The restricted area. The waters of Severn River shoreward of a line beginning at the southeasternmost corner of the U.S. Navy Marine Engineering Laboratory sea wall and running thence southwesterly perpendicular to the main Severn River channel, approximately 560 feet, thence northwesterly parallel to and 50 feet shoreward of the edge of the channel, 1,035 feet, and thence northeasterly perpendicular to the channel, approximately 600 feet, to the shore. Spar buoys will mark the corners of the area adjacent to the channel.

(2485) (b) The regulations. (1) No vessel or person other than specifically authorized military and naval vessels and persons shall enter or remain in the area during its use for experimental purposes. At all other times vessels and persons may use the area without restriction.

(2486) (2) The area will be in use intermittently, and this use will be signified by the presence of white-painted boats or floats, which will be lighted at night.

(2487) (3) Upon observing the boats or floats referred to in paragraph (b)(2) of this section, or upon being warned, vessels and persons shall immediately vacate the area and remain outside the area during the period of use.

(2488) (4) The regulations in this section shall be enforced by the Commandant, Severn River Naval Command, and such agencies as he may designate.

§334.155 Severn River, Naval Station Annapolis, Small Boat Basin, Annapolis, MD; naval restricted area.

(2489) (a) The area. The waters within the Naval Station Annapolis small boat basin and adjacent waters of the Severn River enclosed by a line beginning at the southeast corner of the U.S. Navy Marine Engineering Laboratory; thence to 38°58'56.5"N., 76°28'11.5"W.; thence to 38°58'50.5"N., 76°27'52.0"W.; thence to the southeast corner of the Naval Station's seawall.

(2490) (b) The regulations. No person, vessel or other craft shall enter or remain in the restricted area at any time except as authorized by the enforcing agency.

(2491) (c) Enforcement. The regulations in this section shall be enforced by the Superintendent, U.S. Naval Academy, in Annapolis, Maryland, and such agencies as he/she may designate.

§334.160 Severn River, at U.S. Naval Academy Santee Basin, Annapolis, MD; naval restricted area.

(2492) (a) The area. The waters within the U.S. Naval Academy Santee Basin and adjacent waters of Severn River inclosed by a line beginning at the northeast corner of Dewey Field seawall; thence to latitude 38°59'03", longitude 76°28'47.5"; thence to latitude 38°58'58",

longitude 76°28'40"; and thence to the northwest corner of Farragut Field seawall.

(2493) (b) The regulations. (1) No person in the water, vessel or other craft shall enter or remain in the restricted area at any time except as authorized by the enforcing agency.

(2494) (2) The regulations in this section shall be enforced by the Superintendent, U.S. Naval Academy, Annapolis, MD, and such agencies as he may designate.

§334.170 Chesapeake Bay, in the vicinity of Chesapeake Beach, MD; firing range, Naval Research Laboratory.

(2495) (a) The danger zone–(1) Area A. A roughly rectangular area bounded on the north by latitude 38°39'55"; on the south by latitude 38°39'09"; on the east by longitude 76°31'03"; and on the west by the shore of Chesapeake Bay.

(2496) (2) Area B. The sector of a circle bounded by radii of 9,600 yards bearing 31° (to Bloody Point Bar Light) and 137°30' (to Choptank River Approach Buoy 2), respectively, from the center at the southeast corner of building No. 3; excluding Area A.

(2497) (3) Area C. The segment of a circle inclosed by the arcs of two circles having radii of 9,600 yards and 13,200 yards, respectively, and bounded by the extended radii marking the north and south limits of Area B.

(2498) Note: All bearings referred to true meridian.

(2499) (4) Area D. A roughly rectangular area bounded on the north by an east-west line through Chesapeake Beach Light 2 at the entrance channel to Fishing Creek; on the south by an east-west line through Plum Point Shoal Buoy 1 northeast from Breezy Point; on the east by the established fishing structure limit line; and on the west by the shore of Chesapeake Bay.

(2500) (b) The regulations. (1) No person or vessel shall enter or remain in Area A at any time.

(2501) (2) No person or vessel shall enter or remain in Area B or Area C between the hours of 1:00 p.m. and 5:00 p.m. daily except Sundays, except that through navigation of commercial craft will be permitted in Area C at all times, but such vessels shall proceed on their normal course and shall not delay their progress.

(2502) (3) No fishing structures, other than those presently in established locations, which may be maintained, will be permitted to be established in Area D without specific permission from the Commanding Officer, Naval Research Laboratory.

(2503) (4) The areas will be in use throughout the year, and no further notice is contemplated that firing is continuing.

(2504) (5) Prior to the conduct of each firing practice a patrol vessel will patrol the range to warn navigation. "Bravo" will be flown from a conspicuous point on the patrol vessel and from a prominent position on shore.

(2505) (6) This section shall be enforced by the Commander, Naval Base, Norfolk, Virginia, and such agencies as he/she may designate.

§334.180 Patuxent River, MD; restricted areas, U.S. Naval Air Test Center, Patuxent River, MD.

(2506) (a) Except in the gut off the tip of Point Patience, no person in the water and no craft shall approach closer than 75 yards to the beaches, shoreline, or piers of the area formerly occupied by the U.S. Naval Mine Warfare Test Station, or of U.S. Naval Air Station property. A person in the water or a civilian craft shall not approach rafts, barges, or platforms closer than 100 yards.

(2507) (b) Diving tenders will exhibit a square red flag with white X when underwater diving takes place from naval small craft. At such times, persons in the water and civilian craft shall stay at least 200 yards clear of these vessels and the civilian craft shall proceed at a speed not greater than five knots when within 1,000 yards thereof.

(2508) (c) On occasions, seaplane landings and takeoffs will be practiced in the seadrome area north of the U.S. Naval Air Station, Patuxent River. This area includes those waters of the Patuxent River between Town Point and Hog Point shoreward of a line described as follows: Beginning at a point on the shore just west of Lewis Creek, bearing 161°30' true, 2,000 yards from Patuxent River Light 8; thence to a point bearing 130° true, 1,850 yards from Patuxent River Light 8; thence to a point bearing 247°30' true, 3,650 yards from Drum Point Light 2; thence to a point bearing 235° true, 2,060 yards from Drum Point Light 2; thence to a point bearing 129° true, 700 yards from Drum Point Light 2; thence to a point bearing 137° true, 1,060 yards from Drum Point Light 2; and thence to a point on the shore west of Harper Creek entrance, bearing 158°30' true, 1,900 yards from Drum Point Light 2.

(2509) (d) The regulations in this section shall be enforced by the Commanding Officer, U.S. Naval Air Station, Patuxent River, MD, and such agencies as he may designate.

§ 334.190 Chesapeake Bay, in vicinity of Bloodsworth Island, MD, U.S. Navy.

(2510) (a) The areas–(1) Prohibited area. All waters within a circle 0.5 miles in radius with its center at 38°10'00"N., 76°06'00"W.; Bloodsworth Island, Pone Island, Northeast Island, and Adams Island.

(2511) (2) The danger zone. All waters of Chesapeake Bay and Tangier Sound within an area bounded as follows: Beginning at

(2512) 38°08'15"N., 76°10'00"W.; thence to

(2513) 38°12'00"N., 76°10'00"W.; thence to

(2514) 38°12'00"N., 76°07'00"W.; thence to

(2515) 38°13'00"N., 76°06'00"W.; thence to

(2516) 38°13'00"N., 76°04'00"W.; thence to

(2517) 38°12'00"N., 76°02'00"W.; thence to

(2518) 38°12'00"N., 76°00'00"W.; thence to

(2519) 38°08'15"N., 76°00'00"W.; thence to the point of beginning, excluding the prohibited area described in paragraph (a)(1) of this section.

(2520) (b) The regulations. (1) No person, vessel or other craft shall approach closer than 75 yards to the beaches,

shoreline, or piers of Bloodsworth Island, Pone Island, Northeast Island, Adams Island, or any Patuxent River Naval Air Station property at any time unless authorized to do so by the enforcing agency. No person, vessel or other craft shall approach rafts, barges, or platforms closer than 100 yards.

(2521) (2) No person, vessel, or other craft shall enter or remain in the danger zone when notified by the enforcing authority to keep clear. Any watercraft under way or at anchor, upon being so warned, shall immediately vacate the area and shall remain outside the area until conclusion of potentially hazardous test or training events.

(2522) (3) The area will be in use intermittently throughout the year.

(2523) (4) Prior to the commencement of any potentially hazardous test or training event that requires clearing of non-participant boats from the danger zone, surface or air search of the entire area will be made for the purpose of locating and warning all craft and persons not connected with the test or training event, and a patrol will be maintained throughout the duration of the event.

(2524) (5) All persons, vessels, or other craft shall clear the area when warned by patrol vessels.

(2525) (6) Patrol vessels will provide warning that a potentially hazardous test or training event is in progress or is about to commence; when so warned, fishing or oystering vessels or other craft not directly connected with the event shall not navigate within the danger zone. Deep-draft vessels proceeding in established navigation channels normally will be permitted to traverse the area upon coordination with range patrol vessels. The patrol vessels will ensure safe separation between all non-participant vessels and potentially hazardous operations.

(2526) (7) When potentially hazardous testing or training is not in progress or is not about to commence, oystering and fishing boats and other craft may operate within the danger zone.

(2527) (8) All potentially hazardous test or training events will be performed in such a way as to contain the hazard footprint to the established danger zone described in paragraph (a) of this section. Naval authorities will not be responsible for damage to nets, traps, buoys, pots, fish pounds, stakes, or other equipment that may be located within the danger zone.

(2528) (9) Nothing in this regulation shall be intended to prevent the lawful use of approved waterfowl hunting blinds along the shorelines of Bloodsworth Island range complex, provided that all necessary licenses and permits have been obtained from the Maryland Department of Natural Resources and the completed copy of the permit has been submitted to the Conservation Division Director at NAS Patuxent River. Waterfowl hunters must observe all warnings and range clearances, as noted herein.

(2529) (10) The regulations in this section shall be enforced by the Commander, Naval Air Station Patuxent River, Maryland, and such agencies as he/she may designate.

§334.200 Chesapeake Bay, Point Lookout to Cedar Point; aerial and surface firing range and target area, U.S. Naval Air Station, Patuxent River, Maryland, danger zones.

(2530) (a) Aerial firing range (1) The danger zone. The waters of Chesapeake Bay within an area described as follows: Beginning at the easternmost extremity of Cedar Point; thence easterly to the southern tip of Barren Island; thence southeasterly to

(2531) 38°01'15"N., 76°05'33"W.; thence southwesterly to

(2532) 37°59'25"N., 76°10'54"W.; thence northwesterly to

(2533) 38°02'20"N., 76°17'26"W.; thence northerly to Point No Point Light; thence northwesterly to the shore at 38°15'45"N.; thence northeasterly along the shore to the point of beginning. Aerial and surface firing and dropping of nonexplosive ordnance will be conducted throughout the year.

(2534) (2) The regulations. (i) Through navigation of surface craft outside the target areas will be permitted at all times. Vessels shall proceed on their normal course and shall not delay their progress.

(2535) (ii) Prior to firing or ordnance drops, the range will be patrolled by naval surface craft or aircraft to warn watercraft likely to be endangered. Surface craft so employed will display a square red flag. Naval aircraft will use a method of warning consisting of repeated shallow dives in the area, following each dive by a sharp pullup.

(2536) (iii) Any watercraft under way or at anchor, upon being so warned, shall immediately vacate the area and shall remain outside the area until conclusion of firing practice.

(2537) (iv) Nothing in this section shall prevent the taking of shellfish or the setting of fishing structures within the range outside target areas in accordance with Federal and State regulations; Provided, That no permanent or temporary fishing structures or oyster ground markers shall be placed on the western side of the Chesapeake Bay between Point No Point and Cedar Point without prior written approval of the Commanding Officer, U.S. Naval Air Station, Patuxent River, MD.

(2538) (v) Naval authorities will not be responsible for damage caused by projectiles, bombs, missiles, or Naval or Coast Guard vessels to fishing structures or fishing equipment which may be located in the aerial firing range immediately adjacent to the target areas.

(2539) (b) Target areas–(1) Prohibited area. A circular area with a radius of 1,000 yards having its center at latitude 38°13'00", longitude 76°19'00" identified as Hooper Target.

(2540) (2) The area. A circular area with a radius of 1,000 yards having its center at 38°02'18"N., 76°09'26"W., identified as Hannibal Target.

(2541) (3) The regulations. Nonexplosive projectiles and bombs will be dropped at frequent intervals in the target areas. Hooper and Hannibal target areas shall be closed

to navigation at all times, except for vessels engaged in operational and maintenance activities as directed by the Commanding Officer of the U.S. Naval Air Station, Patuxent River, Maryland. No person in the waters, vessel, or other craft shall enter or remain in the closed area or climb on targets except on prior written approval of the Commanding Officer, U.S. Naval Air Station, Patuxent River, Maryland.

(2542) (c) Enforcement. The regulations in this section shall be enforced by the Commanding Officer of the Naval Air Station, Patuxent River, Maryland and such agencies as he or she may designate.

§334.210 Chesapeake Bay, in vicinity of Tangier Island; Naval guided missiles test operations area.

(2543) (a) The danger zone–(1) Prohibited area. A circle 1,000 yards in radius with its center at latitude 37°47'54", longitude 76°03'48".

(2544) (2) Restricted area. A circle three nautical miles in radius with its center at latitude 37°47'54", longitude 76°03'48", excluding the prohibited area.

(2545) (b) The regulations. (1) Persons, vessels or other craft shall not enter or remain in the prohibited area at any time unless authorized to do so by the enforcing agency.

(2546) (2) Except as otherwise provided in paragraph (b)(6) of this section, persons, vessels or other craft shall not enter or remain in the restricted area when firing is or will soon be in progress unless authorized to do so by the enforcing agency.

(2547) (3) Advance notice will be given of the date on which the first firing is to be conducted and such notice will be published in "Notice to Mariners." Thereafter, the danger zone will be in use intermittently throughout the year and no further notice is contemplated that firing is continuing.

(2548) (4) Warning that firing is or will soon be in progress will be indicated by a red flag displayed from one of six dolphin platforms on the perimeter of the prohibited area, and by patrol vessels within the danger zone or by aircraft employing the method of warning known as "buzzing" which consists of low flight by the airplane and repeated opening and closing of the throttle. Surface or air search of the entire area will be made prior to the commencement of firing on each scheduled day. During periods of firing a patrol vessel will remain in the approaches to the restricted area and maintain continuous contact with the firing planes to warn when the area is not clear.

(2549) (5) Upon observing the warning flag or upon receiving a warning by any of the patrol vessels or aircraft, persons, vessels or other craft shall immediately vacate the restricted area and remain outside the area until the conclusion of firing for the day.

(2550) (6) This section shall not deny traverse of portions of the restricted area by commercial craft proceeding in established steamer lanes, but when firing is or will soon be in progress all such craft shall proceed on their normal course through the area with all practicable speed.

(2551) (7) All projectiles, bombs and rockets will be fired to land within the prohibited area, and on or in the immediate vicinity of a target in the restricted area located adjacent to the west side of Tangier Island. The Department of the Navy will not be responsible for damages by such projectiles, bombs, or rockets to nets, traps, buoys, pots, fishponds, stakes, or other equipment which may be located within the restricted area.

(2552) (8) The regulations of this section shall be enforced by the Commander, Naval Air Bases, Fifth Naval District, Norfolk, Virginia, and such agencies as he may designate.

§334.220 Chesapeake Bay, south of Tangier Island, Virginia; naval firing range.

(2553) (a) The danger zone. Beginning at latitude 37°46'39", longitude 75°57'43", thence to latitude 37°43'42", longitude 75°55'30"; thence to latitude 37°27'00", longitude 76°02'48"; thence to latitude 37°27'00", longitude 76°08'00"; thence to latitude 37°45'00", longitude 76°09'48"; thence to latitude 37°45'00", longitude 76°08'51"; and thence along the circumference of a circle of five nautical miles radius whose center is at latitude 37°47'54", longitude 76°03'48", to the point of beginning.

(2554) (b) The regulations. (1) Any vessel propelled by mechanical means or by sail at a speed greater than five knots may proceed through the danger zone to and from points without, but not from one point to another point within, the area, except when especially notified to the contrary.

(2555) (2) All vessels, other than naval craft, are forbidden to anchor within the danger zone except in cases of great emergency. All vessels anchoring under circumstances of great emergency within the area shall leave the area immediately after the emergency ceases or upon notification by the enforcing agency.

(2556) (3) Fishing, oystering, clamming, crabbing, and other aquatic activities are forbidden within the limits of the danger zone, except that existing fishing structures licensed by the State of Virginia may be maintained and operated; Provided, The owners thereof obtain written permits from the enforcing agency designated in paragraph (b)(5) of this section.

(2557) (4) Day and night firing over the range will be conducted intermittently by one or more vessels, depending on weather and operating schedules. When firing is in progress, adequate patrol by naval craft will be conducted to prevent vessels from entering or remaining within the danger zone.

(2558) (5) This section shall be enforced by the Commandant, Fifth Naval District, U.S. Naval Base, Norfolk, Virginia, and such agencies as he may designate.

§334.230 Potomac River.

(2559) a) Naval Surface Warfare Center, Dahlgren, VA–(1) The areas. Portions of the Upper Machodoc Creek and Potomac River near Dahlgren, VA as described below:

(2560) (i) Lower zone. The entire portion of the lower Potomac River between a line from Point Lookout, Maryland, to Smith Point, Virginia, and a line from Buoy 14 (abreast of St. Clements Island) to a point near the northeast shore of Hollis Marsh at 38°10'00"N., 76°45'22.4"W. Hazardous operations are conducted in this zone at infrequent intervals.

(2561) (ii) Middle zone. Beginning at the intersection of the Harry W. Nice Bridge with the Virginia shore; thence to Light 33; thence to 38°19'06"N., 76°57'06"W. which point is about 3,300 yards east-southeast of Light 30; thence to Line of Fire Buoy O, about 1,150 yards southwest of Swan Point; thence to Line of Fire Buoy M, about 1,700 yards south of Potomac View; thence to Line of Fire Buoy K, about 1,400 yards southwesterly of the lower end of Cobb Island; thence to Buoy 14, abreast of St. Clements Island, thence southwest to a point near the northeast shore of Hollis Marsh at 38°10'00"N., 76°45'22.4"W.; thence northwest to Line of Fire Buoy J, about 3,000 yards off Popes Creek, Virginia; thence to Line of Fire Buoy L, about 3,600 yards off Church Point; thence to Line of Fire Buoy N, about 900 yards off Colonial Beach; thence to Line of Fire Buoy P, about 1,000 yards off Bluff Point; thence northwest to 38°17'54"N., 77°01'02"W., a point of the Virginia shore on property of the Naval Support Facility Dahlgren, a distance of about 4,080 yards; thence north along the Potomac shore of Naval Surface Warfare Center, Dahlgren to Baber Point; and thence west along the Upper Machodoc Creek shore of Naval Surface Warfare Center, Dahlgren to Howland Point at 38°19'0.5"N., 77°03'23"W.; thence northeast to 38°19'18"N., 77°02'29"W., a point on the Naval Surface Warfare Center, Dahlgren shore about 350 yards southeast of the base of the Navy recreational pier. Hazardous operations are normally conducted in this zone daily except Saturdays, Sundays, and national holidays.

(2562) (iii) Upper zone. Beginning at Mathias Point, VA; thence north to Light 5; thence north-northeast to Light 6; thence east-southeast to Lighted Buoy 2, thence east-southeast to a point on the Maryland shore at approximately 38°23'35.5"N., 76°59'15.5"W.; thence south along the Maryland shore to, and then along, a line passing through Light 1 to the Virginia shore, parallel to the Harry W. Nice Bridge; thence north with the Virginia shore to the point of beginning. Hazardous operations are conducted in this zone at infrequent intervals.

(2563) (2) The regulations. (i) Hazardous operations normally take place between the hours of 8 a.m. and 5 p.m. daily except Saturdays, Sundays and national holidays, with infrequent night firing between 5 p.m. and 10:30 p.m. During a national emergency, hazardous operations will take place between the hours of 6 a.m. and 10:30 p.m. daily except Sundays. Hazardous operations may involve firing large or small caliber guns and projectiles, aerial bombing, use of directed energy, and operating manned or unmanned watercraft.

(2564) (ii) When hazardous operations are in progress, no person, or fishing or oystering vessels shall operate within the danger zone affected unless so authorized by the Naval Surface Warfare Center, Dahlgren's patrol boats. Oystering and fishing boats or other craft may cross the river in the danger zone only after they have reported to the patrol boat and received instructions as to when and where to cross. Deep-draft vessels using dredged channels and propelled by mechanical power at a speed greater than five miles per hour may proceed directly through the danger zones without restriction except when notified to the contrary by the patrol boat. Unless instructed to the contrary by the patrol boat, small craft navigating up or down the Potomac River during hazardous operations shall proceed outside of the northeastern boundary of the Middle Danger Zone. All craft desiring to enter the Middle Danger Zone when proceeding in or out of Upper Machodoc Creek during hazardous operations will be instructed by the patrol boat; for those craft that desire to proceed in or out of Upper Machodoc Creek on a course between the western shore of the Potomac River and a line from the Main Dock of Naval Surface Warfare Center, Dahlgren to Line of Fire Buoy P, clearance will be granted to proceed upon request directed to the patrol boat.

(2565) (iii) Due to hazards of unexploded ordnance, no person or craft in the Middle Danger Zone shall approach closer than 100 yards to the shoreline of Naval Surface Warfare Center, Dahlgren, previously known as the Naval Surface Weapons Center.

(2566) (3) Enforcement. The regulations shall be enforced by the Commander, Naval Surface Warfare Center, Dahlgren and such agencies as he/she may designate. Patrol boats, in the execution of their mission assigned herein, shall display a square red flag during daylight hours for purposes of identification; at night time, a 32 point red light shall be displayed at the mast head. Naval Surface Warfare Center, Dahlgren (Range Control) can be contacted by Marine VHF radio (Channel 16) or by telephone 540–653–8791.

(2567) (4) Exceptions. Nothing in this regulation shall be intended to prevent commercial fishing or the lawful use of approved waterfowl hunting blinds along the shorelines of Naval Surface Warfare Center, Dahlgren, provided that all necessary licenses and permits have been obtained from the Maryland Department of Natural Resources, the Virginia Department of Game and Inland Fisheries, or the Potomac River Fisheries Commission. Waterfowl hunters shall provide a completed copy of their blind permit to the Natural Resources Manager at Naval Surface Warfare Center, Dahlgren. Commercial fishermen and waterfowl hunters must observe all warnings and range clearances, as noted

herein. Federal, State and local law enforcement agencies are exempt from the provisions of paragraph (a) of this section.

(2568) (b) Accotink Bay, Accotink Creek, and Pohick Bay; United States Military Reservation, Fort Belvoir, VA–(1) The danger zone. The waters of Accotink Bay, Accotink Creek, and Pohick Bay, Virginia, within and adjacent to the target ranges of the United States Military Reservation, Fort Belvoir, as follows: All of Accotink Bay; all of Accotink Creek below the bridge which crosses Accotink Creek approximately 400 yards south of U.S. Highway No. 1; and that portion of Pohick Bay bordering its north shore. The mouth of Accotink Bay and that portion of Pohick Bay within the danger zone will be marked by the Post Commander with suitable warning buoys.

(2569) (2) The regulations. (i) When firing affecting the area is in progress, the Post Commander will post guards at such locations that the waters in the danger zone may be observed and arrange signals whereby these guards may stop the firing should any person be seen in the danger zone. When firing is in progress, the Post Commander will cause to be displayed both on the east shore of Accotink Bay at its mouth and near the danger zone boundary on Accotink Creek a red streamer which shall be visible to a person in a boat near those points.

(2570) (ii) Persons desiring to cross the waters in the danger zone shall first determine whether a red streamer is displayed on the east Shore of Accotink Bay at its mouth or near the danger zone boundary on Accotink Creek. If the red streamer is displayed, it will indicate that firing is in progress and that the waters in the danger zone are covered by rifle fire, and the area shall not be entered until the streamer is lowered.

(2571) (iii) The Post Commander is hereby authorized by using such agencies and equipment necessary to stop all boats at the boundary of the danger zone and prohibit their crossing the area until convenient to the firing schedule to do so.

§334.235 Potomac River, Marine Corps Base Quantico (MCB Quantico) in vicinity of Marine Corps Air Facility (MCAF), restricted area.

(2572) (a) The area. All of the navigable waters of the Potomac River extending approximately 500 meters from the high-water mark on the Eastern shoreline of the MCAF, bounded by these coordinates (including the Chopawamsic Creek channel, but excluding Chopawamsic Island): Beginning at

(2573) 38°29'34.04"N., 077°18'22.4"W. (Point A); thence to

(2574) 38°29'43.01"N., 077°18'4.1"W. (Point B); thence to

(2575) 38°29'55.1"N., 077°17'51.3"W. (Point C); thence to

(2576) 38°30'10.01"N., 077°17'40.3"W. (Point D); thence to

(2577) 38°30'23.43"N., 077°17'50.30"W. (Point E); then along the western shoreline of Chopawamsic Island to

(2578) 38°30'35.13"N., 077°17'47.45"W. (Point F); thence to

(2579) 38°30'42.1"N., 077°17'37.1"W. (Point G); thence to

(2580) 38°30'50.71"N., 077°17'54.12"W. (Point H); then along the shoreline to

(2581) 38°30'0.58"N., 077°18'39.26"W. (Point I); then across the Chopawamsic Channel to

(2582) 38°29'58.45"N., 077°18'39.97"W. (Point J); thence to

(2583) 38°29'38.2"N., 077°18'38.14"W. (Point K); and thence to the beginning point of origin.

(2584) (b) The regulations. (1) All persons, vessels, or other craft are prohibited from entering, transiting, drifting, dredging, or anchoring within the restricted area without the permission of the Commander, MCB Quantico or his/her designated representatives. The restriction will be in place 24 hours a day, seven days a week.

(2585) (2) The boundary of the restricted area will be demarcated with marked buoys and warning signs set at 500 foot intervals. In addition, floating small craft intrusion barriers marked with reflective material will be placed across the Chopawamsic Creek channel at the entrance to the channel from the Potomac River and immediately west of the CSX railroad bridge.

(2586) (c) Enforcement. The regulations in this section shall be enforced by the Commander, MCB Quantico or any such agencies he/she designates. The areas identified in paragraph (a) of this section will be monitored 24 hours a day, 7 days a week. Any person or vessel encroaching within the areas identified in paragraph (a) of this section will be directed to immediately leave the restricted area. Failure to do so could result in forceful removal and/or criminal charges.

(2587) (d) Exceptions. Commercial fisherman will be authorized controlled access to the restricted area (with the exception of Chopawamisc Creek channel) after registering with MCD Quantico officials and following specific access notification procedures.

§334.240 Potomac River, Mattawoman Creek and Chicamuxen Creek; U.S. Naval Surface Weapons Center, Indian Head Division, Indian Head, MD.

(2588) (a) The danger zone. Beginning at a point on the easterly shore of the Potomac River at

(2589) 38°36'00"N., 77°11'00"W.; thence

(2590) 38°34'30"N., 77°13'00"W.; thence

(2591) 38°33'20"N., 77°14'20"W.; thence

(2592) 38°32'20"N., 77°15'10"W.; thence

(2593) 38°32'00"N., 77°15'00"W.; thence

(2594) 38°32'30"N., 77°14'00"W.; thence upstream along the easterly shoreline of Chicamuxen Creek to its head; thence downstream along the westerly shoreline of Chicamuxen Creek to the southernmost point of Stump Neck; thence northeasterly along the shoreline of Stump Neck to the mouth of Mattawoman Creek; thence along the southeasterly shore of Mattawoman Creek to the pilings remaining from the footbridge connecting the

left bank of the creek to Naval Surface Warfare Center, Indian Head Division; thence along the northwesterly shore of Mattawoman Creek from the pilings remaining from the footbridge to the mouth of the creek; thence in a northeasterly direction along the easterly shore of the Potomac River to the point of beginning.

(2595) (b) The regulations. (1) Firings consisting of controlled explosions within the danger zone, and controlled shore operations, or accidental explosions, hazardous to vessel traffic within the limits of the danger zone, may take place at any time of the day or night and on any day of the week.

(2596) (2) Flashing red lights, horns, and signs established at appropriate points will warn vessels of impending tests or operations considered to be hazardous to vessels within the danger zone.

(2597) (3) No persons or vessels except vessels of the United States or vessels authorized by the enforcing agency shall enter or remain in the danger zone while lights are flashing, when warning horns are in operation, or when warned or directed by a patrol vessel.

(2598) (4) Nothing in this section shall prohibit the use of Mattawoman Creek or Chicamuxen Creek as a harbor of refuge because of stress of weather.

(2599) (5) Except as prescribed in paragraph (b)(3) of this section, persons and vessels may enter and proceed through the danger zone without restriction. However, accidental explosions may occur at any time and persons and vessels entering the area do so at their own risk.

(2600) (6) Fishermen operating in the danger zone when warning signals are sounded shall evacuate the area immediately.

(2601) (7) The regulations in this section shall be enforced by the Commanding Officer, U.S. Naval Surface Warfare Center, Indian Head Division, Indian Head, Maryland.

§334.250 Gunston Cove, at Whitestone Point, VA; U.S. Army restricted area.

(2602) (a) The area. The waters within an area beginning at a point on the shoreline at longitude 77°08'36"; thence to latitude 38°40'22", longitude 77°08'39"; thence to latitude 38°40'14", longitude 77°08'22"; thence to a point on the shoreline at longitude 77°08'18" and thence along the shoreline to the point of beginning.

(2603) (b) The regulations. No person, vessel, or other craft shall enter or remain in the area at any time except as authorized by the enforcing agency.

(2604) (c) The regulations in this section shall be enforced by the District Engineer, U.S. Army Engineer District, Philadelphia, PA and such agencies as he may designate.

§334.260 York River, VA; naval restricted areas.

(2605) (a) The areas-(1) Naval mine service-testing area (prohibited). A rectangular area surrounding Piers 1 and 2, Naval Weapons Station, and extending upstream therefrom, beginning at a point on the shore line at

(2606) 37°15'25"N., 76°32'32"W.; thence to

(2607) 37°15'42"N., 76°32'06"W.; thence to

(2608) 37°15'27"N., 76°31'48"W.; thence to

(2609) 37°15'05"N., 76°31'27"W.; thence to a point on the shore line at

(2610) 37°14'51"N., 76°31'50"W.; and thence along the shore line to the point of beginning.

(2611) (2) Naval mine service-testing area (restricted). A rectangular area adjacent to the northeast boundary of the prohibited area described in subparagraph (1) of this paragraph, beginning at

(2612) 37°16'00"N., 76°32'29"W.; thence to

(2613) 37°16'23"N., 76°32'00"W.; thence to

(2614) 37°15'27"N., 76°30'54"W.; thence to

(2615) 37°15'05"N., 76°31'27"W.; thence to

(2616) 37°15'27"N., 76°31'48"W.; thence to

(2617) 37°15'42"N., 76°32'06"W.; thence to

(2618) 37°15'40"N., 76°32'09"W.; and thence to the point of beginning.

(2619) (3) Explosives-Handling Berth (Naval). A circular area of 600 yards radius with its center at latitude 37°13'56"N., longitude 76°28'48"W.

(2620) (b) The regulations. (1) All persons and all vessels other than naval craft are forbidden to enter the prohibited area described in paragraph (a)(1) of this section.

(2621) (2) Trawling, dragging, and net-fishing are prohibited, and no permanent obstructions may at any time be placed in the area described in paragraph (a)(2) of this section. Upon official notification, any vessel anchored in the area and any person in the area will be required to vacate the area during the actual mine-laying operation. Persons and vessels entering the area during mine-laying operations by aircraft must proceed directly through the area without delay, except in case of emergency. Naval authorities are required to publish advance notice of mine-laying and/or retrieving operations scheduled to be carried on in the area, and during such published periods of operation, fishing or other aquatic activities are forbidden in the area. No vessel will be denied passage through the area at any time during either mine-laying or retrieving operations.

(2622) (3) The Explosives-Handling Berth (Naval) described in paragraph (a)(3) of this section is reserved for the exclusive use of naval vessels and except in cases of emergency no other vessel shall anchor therein without the permission of local naval authorities, obtained through the Captain of the Port, U.S. Coast Guard, Norfolk, VA. There shall be no restriction on the movement of vessels through the Explosive-Handling Berth.

(2623) (4) Vessels shall not be anchored, nor shall persons in the water approach within 300 yards of the perimeter of the Explosives-Handling Berth when that berth is occupied by a vessel handling explosives.

(2624) (5) The regulations of this section shall be enforced by the Commander, Naval Base, Norfolk, Virginia, and such agencies as he may designate.

§334.270 York River adjacent to Cheatham Annex Depot, Naval Supply Center, Williamsburg, Virginia; restricted area.

(2625) (a) The area. The waters of York River bounded as follows: Beginning at a point on shore at Cheatham Annex Depot at

(2626) 37°17'14"N., 76°35'38"W.; thence to a point offshore at

(2627) 37°17'52"N., 76°35'20"W.; thence approximately parallel to the shore to a point at

(2628) 37°17'23"N., 76°34'39"W.; thence to the shore at

(2629) 37°16'58"N., 76°35'03"W.; and thence along the shore at Cheatham Annex Depot to the point of beginning.

(2630) (b) The regulations. (1) No loitering will be permitted within the area. Oystermen may work their own leaseholds or public bottom within the area, provided they obtain special permission from the Officer in Charge, Cheatham Annex Depot, Naval Supply Center, Williamsburg, Virginia.

(2631) (2) The regulations in this section shall be enforced by the Officer in Charge, Cheatham Annex Depot, U.S. Naval Supply Center, Williamsburg, Virginia.

§334.275 North and Southwest Branch, Back River, Hampton, U.S. Air Force Base, Langley, VA; restricted area.

(2632) (a) The area. Beginning at a point on the island at the entrance to Tide Mills Creek in the Southwest Branch of the Back River at 37°03'50"N., 076°22'00"W., thence along the shore of Langley Air Force Base, 35 yards off the ordinary mean high water (MHW) mark, to a point in the Northwest Branch of the Back River at 37°06'40"N., 076°22'55"W.

(2633) (b) The regulations.

(2634) (1) No persons or vessels, recreational or commercial, may enter this restricted area without the permission of the Commanding Officer, Langley Air Force Base.

(2635) (2) The Commanding Officer shall not prevent persons from fulfilling their legal obligation to the Commonwealth of Virginia with regard to oyster planting ground leases that lie within the restricted area. The Commanding Officer may, at his/her discretion, require those persons and vessels working those leases to register with the Langley Air Force Base Security Officer on an annual basis. Failure to comply with this request may result in denial to access the oyster grounds until such time as the request has been complied with.

(2636) (3) Persons or vessels contracted with or utilized by the Commonwealth of Virginia to work the oyster grounds shall give verbal notification to the base Security Office prior to entering the restricted area.

(2637) (4) City, State and Federal law enforcement vessels may enter the restricted area at any time they deem necessary for the enforcement of their respective laws.

(2638) (c) Enforcement. The regulations in this section shall be enforced by the Commanding Officer of the Langley Air Force Base and such agencies as he/she may designate.

§334.280 James River between the entrance to Skiffes Creek and Mulberry Point, VA; Army training and small craft testing area.

(2639) (a) The restricted area. Beginning on the shore at

(2640) 37°09'54"N., 76°36'25"W.; thence westerly to

(2641) 37°09'50"N., 76°37'45.5"W.; thence southerly to

(2642) 37°09'00"N., 76°38'05"W.; thence southerly to

(2643) 37°08'22"N., 76°37'55"W.; thence due east to the shore at

(2644) 37°08'22"N., 76°37'22"W.; thence northerly along the shore to the point of beginning.

(2645) (b) The regulations. (1) No vessels other than Department of the Army vessels, and no persons other than persons embarked in such vessels shall remain in or enter the restricted area except as provided in paragraph (b)(2) of this section.

(2646) (2) Nothing in the regulations of this section shall prevent the harvesting and cultivation of oyster beds or the setting of fish traps within the restricted area under regulations of the Department of the Army, nor will the passage of fishing vessels to or from authorized traps be unreasonably interfered with or restricted.

(2647) (3) Vessels anchored in the area shall be so anchored as not to obstruct the arc of visibility of Deepwater Shoals Light.

(2648) (4) The Commanding General, Fort Eustis, VA, will, to the extent possible give public notice from time to time through local news media and the Coast Guard's Local Notice to Mariners of the schedule of intended Army use of the restricted area.

(2649) (5) The continuation of the restricted area for more than 3 years after the date of its establishment shall be dependent upon the outcome of the consideration of a request for its continuance submitted to the District Engineer, U.S. Army Engineer District, Norfolk, Virginia, by the using agency at least 3 months prior to the expiration of the 3 years.

(2650) (6) The regulations in this section shall be enforced by the Commanding General, Fort Eustis, VA, and such agencies as he may designate.

§334.290 Elizabeth River, Southern Branch, VA, naval restricted areas.

(2651) (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.

(2652) (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.

(2653) (3) Southgate Terminal Area. Beginning at a point at the northeast corner of Southgate Terminal Annex of Norfolk Naval Shipyard, at latitude 36°48'23", longitude 76°17'39"; thence east to latitude 36°48'23", longitude 76°17'29"; thence southerly along the western boundary of Norfolk Harbor 35-foot channel to latitude 36°48'04", longitude 76°17'33"; thence west to latitude 36°48'04", longitude 76°17'41"; and thence along the shore in a northerly direction to the point of beginning.

(2654) (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.

(2655) (2) This section shall be enforced by the Commander, Norfolk Naval Shipyard, Portsmouth, VA, and such agencies as he may designate.

§334.293 Elizabeth River, Craney Island Refueling Pier Restricted Area, Portsmouth VA; Naval Restricted Area.

(2656) (a) The area. (1) The waters within an area beginning at a point on the shore at

(2657) 36°53'17.4"N., 76°20'21.0"W.; thence easterly to

(2658) 36°53'16.8"N., 76°20'14.4"W.; thence southwesterly to

(2659) 36°53'00.0"N., 76°20'18.0"W.; thence southeasterly to

(2660) 36°52'55.2"N., 76°20'16.5"W.; thence southwesterly to

(2661) 36°52'52.2"N., 76°20'18.0"W.; thence southwesterly to

(2662) 36°52'49.8"N., 76°20'25.8"W.; thence northwesterly to

(2663) 36°52'58.2"N., 76°20'33.6"W.; thence northeasterly to a point on the shore at

(2664) 36°53'00.0"N., 76°20'30.0"W.; thence northerly along the shoreline to the point of beginning.

(2665) (b) The regulation. No vessel or persons may enter the restricted area unless specific authorization is granted by the Commander, Navy Region, Mid-Atlantic and/or other persons or agencies as he/she may designate.

(2666) (c) Enforcement. The regulation in this section, promulgated by the Corps of Engineers, shall be enforced by the Commander, Navy Region, Mid-Atlantic, and such agencies or persons as he/she may designate.

§334.300 Hampton Roads and Willoughby Bay, Norfolk Naval Base, Naval Restricted Area, Norfolk, Virginia.

(2667) (a) The area. (1) The waters within an area beginning at

(2668) 36°55'55.0"N., 76°20'02.0"W.; thence northwesterly to

(2669) 36°56'00.0"N., 76°20'08.0"W.; thence northerly along the eastern limit of Norfolk Harbor Channel to

(2670) 36°57'52.0"N., 76°20'00.0"W.; thence easterly to

(2671) 36°57'52.0"N., 76°19'35.0"W.; thence to

(2672) 36°57'47.7"N., 76°18'57.0"W.; thence southeasterly to

(2673) 36°57'26.0"N., 76°18'42.0"W.; thence easterly to

(2674) 36°57'26.2"N., 76°17'55.2"W.; thence southerly to

(2675) 36°57'05.0"N., 76°17'52.0"W.; thence southeasterly to

(2676) 36°56'56.2"N., 76°17'27.0"W.; thence northeasterly to

(2677) 36°57'10.0"N., 76°16'29.0"W.; thence to the shoreline at

(2678) 36°57'18.8"N., 76°16'22.0"W. at the Naval Air Station.

(2679) (2) Beginning at a point on the Naval Station shore at

(2680) 36°56'37.5"N., 76°19'44.0"W.; thence westerly and northerly along the breakwater to its extremity at

(2681) 36°56'41.5"N., 76°19'54.0"W.; thence westerly to a point on the eastern limit of Norfolk Harbor Channel at

(2682) 36°56'41.5"N., 76°20'05.5"W.; thence northerly along the eastern limit of Norfolk Harbor Channel to

(2683) 36°57'52.0"N., 76°20'00.0"W.; thence easterly to

(2684) 36°57'52.0"N., 76°19'35.0"W.; thence to

(2685) 36°57'47.7"N., 76°18'57.0"W.; thence southeasterly to

(2686) 36°57'26.0"N., 76°18'42.0"W.; thence easterly to

(2687) 36°57'26.2"N., 76°17'55.2"W.; thence southerly to

(2688) 36°57'05.0"N., 76°17'52.0"W.; thence southeasterly to

(2689) 36°56'56.2"N., 76°17'27.0"W.; thence northeasterly to

(2690) 36°57'10.0"N., 76°16'29.0"W.; and thence to the shoreline at

(2691) 36°57'18.8"N., 76°16'22.0W., at the Naval Air Station.

(2692) (b) The regulation. No vessel or persons may enter the restricted area unless specific authorization is granted by the Commander, Navy Region, Mid-Atlantic and/or other persons or agencies as he/she may designate.

(2693) (c) Enforcement. The regulation in this section, promulgated by the United States Army Corps of Engineers, shall be enforced by the Commander, Navy

Region, Mid-Atlantic and/or such agencies or persons as he/she may designate.

§334.310 Chesapeake Bay, Lynnhaven Roads; Navy amphibious training area.

(2694) (a) The restricted area. Beginning at

(2695) 36°55'47.0"N., 76°11'04.5"W.; thence to

(2696) 36°59'04.0"N., 76°10'11.0"W.; thence to

(2697) 36°58'28.5"N., 76°07'54.0"W.; thence to

(2698) 36°55'27.5"N., 76°08'42.0"W.; thence westerly along the shore and across the mouth of Little Creek to the point of beginning.

(2699) (b) The regulations. (1) No fish-pound stakes or structures shall be allowed in the restricted area.

(2700) (2) No person or vessel shall approach within 300 yards of any naval vessel or within 600 yards of any vessel displaying the red "baker" burgee.

(2701) (3) This section shall be enforced by the Commandant, Fifth Naval District, and such agencies as he may designate.

§334.320 Chesapeake Bay entrance; naval restricted area.

(2702) (a) The area. Beginning at a point on the south shore of Chesapeake Bay at longitude 76°03'06"W.; thence to

(2703) 37°01'18"N., 76°02'06"W.; thence to

(2704) 37°00'18"N., 75°55'54"W.; thence to

(2705) 36°58'00"N., 75°48'24"W.; thence to

(2706) 36°51'48"N., 75°51'00"W.; thence to the shore at 75°58'48"W., and thence northwesterly and southwesterly along the shore at Cape Henry to the point of beginning.

(2707) (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.

(2708) (2) This section shall be enforced by the Commandant, Fifth Naval District, Norfolk, VA.

§334.330 Atlantic Ocean and connecting waters in vicinity of Myrtle Island, VA; Air Force practice bombing, rocket firing, and gunnery range.

(2709) (a) The danger zone. The waters of the Atlantic Ocean and connecting waters within an area described as follows: Beginning at

(2710) 37°12'18"N., 75°46'00"W.; thence southwesterly to

(2711) 37°08'21"N., 75°50'00"W.; thence northwesterly along the arc of a circle having a radius of three nautical miles and centered at

(2712) 37°11'16"N., 75°49'29"W., to

(2713) 37°10'14"N., 75°52'57"W.; thence northeasterly to

(2714) 37°14'30"N., 75°48'32"W.; thence southeasterly to

(2715) 37°13'38"N., 75°46'18"W.; and thence southeasterly to the point of beginning.

(2716) (b) The regulations. (1) No person or vessel shall enter or remain in the danger zone except during intervals specified and publicized from time to time in local newspapers or by radio announcement.

(2717) (2) This section shall be enforced by the Commanding General, Tactical Air Command, Langley Air Force Base, Virginia, and such agencies as he may designate.

§334.340 Chesapeake Bay off Plumtree Island, Hampton, va; Air Force precision test area.

(2718) (a) The danger zone. The waters of Chesapeake Bay and connecting waters within an area bounded as follows: Beginning at 37°08'12"N., 76°19'30"W., which is a point on the circumference of a circle of 10,000-foot radius with its center on Plumtree Point at 37°07'30"N., 76°17'36"W.; thence clockwise along the circumference of the circle to 37°09'06"N., 76°18'00"W.; thence southeasterly to 37°08'12"N., 76°17'48"W.; thence clockwise along the circumference of a circle of 4,000-foot radius (with its center at 37°07'30"N., 76°17'36"W. to 37°07'48"N., 76°18'24"W.; thence northwesterly to the point of beginning.

(2719) (b) The regulations. (1) The danger zone will be in use not more than a total of 4 hours per month, which hours shall be during not more than any 2 days per month.

(2720) (2) No person or vessel shall enter or remain in the danger zone during periods of firing or bombing or when the zone is otherwise in use.

(2721) (3) The Commander, Tactical Air Command, Langley Air Force Base, VA, shall be responsible for publicizing in advance through the Coast Guard's "Local Notice to Mariners," in the local press, and by radio from time to time the schedule of use of the area, and shall station patrol boats to warn vessels during periods of use.

(2722) (4) This section shall be enforced by the Commander, Tactical Air Command, Langley Air Force Base, VA, or such agency as he may designate.

(2723) (c) Disestablishment of danger zone. The danger zone will be disestablished not later than December 31, 1967, unless written application for its continuance shall have been made to and approved by the Secretary of the Army prior to that date.

§334.350 Chesapeake Bay off Fort Monroe, VA; firing range danger zone.

(2724) (a) The danger zone. All of the water area lying within a section extending seaward a distance of 4,600 yards between radial lines bearing 83° True and 115° True, respectively, from a point on shore at latitude 37°01'30"N., longitude 76°17'54"W.

(2725) (b) The regulations. (1) No weapon having a greater range than the 30-caliber carbine is to be fired into the firing range danger zone.

(2726) (2) During periods when firing is in progress, red flags will be displayed at conspicuous locations on the beach. Observers will be on duty and firing will be suspended as long as any vessel is within the danger zone.

(2727) (3) Passage of vessels through the area will not be prohibited at any time, nor will commercial fishermen

be prohibited from working fish nets within the area. No loitering or anchoring for other purposes will be permitted during announced firing periods.

(2728) (4) No firing will be done during hours of darkness or low visibility.

(2729) (5) The Commander, Fort Monroe, VA, is responsible for furnishing in advance the firing schedule to the Commander, 5th Coast Guard District, for publication in his "Local Notice to Mariners" and to the local press at Norfolk and Newport News, VA.

(2730) (c) The regulations in this section shall be enforced by the Commanding Officer, Fort Monroe, VA, and such agencies as he may designate.

§334.360 Chesapeake Bay off Fort Monroe, Virginia; restricted area, U.S. Naval Base and Naval Surface Weapon Center.

(2731) (a) The area. Beginning at

(2732) 37°01'03"N., 76°17'52"W.; thence to

(2733) 37°01'00"N., 76°16'11"W.; thence to

(2734) 36°59'43"N., 76°16'11"W.; thence to

(2735) 36°59'18"N., 76°17'52"W.; thence to

(2736) 37°00'05"N., 76°18'18"W.; thence north along the seawall to the point of beginning.

(2737) (b) The regulations. (1) Anchoring, trawling, fishing and dragging are prohibited in the restricted area, and no object, either attached to a vessel or otherwise, shall be placed on or near the bottom unless authorized by the Facility Manager, Naval Surface Warfare Center, Dahlgren Division Coastal Systems Station Detachment, Fort Monroe, Virginia.

(2738) (2) This section shall be enforced by the Commander, Naval Base, Norfolk, Virginia, and such agencies as he may designate.

§334.370 Chesapeake Bay, Lynnhaven Roads; danger zones, U.S. Naval Amphibious Base.

(2739) (a) Underwater demolitions area (prohibited)–(1) The area. A portion of the restricted area for Navy amphibious training operations described in Sec. 334.310 along the south shore of the Chesapeake Bay, bounded as follows: Beginning at a point at the mean high water line,

(2740) 36°55'26.5"N., 76°08'43"W.; thence 700 yards to

(2741) 36°55'48"N., 76°08'38"W.; thence 500 yards to

(2742) 36°55'46"N., 76°08'57"W.; thence 500 yards to

(2743) 36°55'37"N., 76°09'02"W.; thence 100 yards to

(2744) 36°55'36"N., 76°08'57"W.; thence 200 yards to the mean high water line at

(2745) 36°55'39.5"N., 76°08'59"W.; thence 400 yards along the mean high water line to the point of beginning. The area will be marked by range poles set on shore of the prolongation of the lines forming the eastern and western boundaries.

(2746) (2) The regulations. Persons or vessels, other than those vessels owned and operated by the United States, shall not enter the prohibited area at any time unless authorized to do so by the enforcing agency.

(2747) (b) Small-arms firing range–(1) The Area. Beginning at a point on the shore line at

(2748) 36°55'27"N., 76°08'38"W.; thence to

(2749) 36°55'50"N., 76°08'37"W.; thence to

(2750) 36°57'11"N., 76°08'11"W.; thence to

(2751) 36°56'53"N., 76°07'18"W., thence to

(2752) 36°55'39"N., 76°07'46"W.; thence to

(2753) 36°55'22"N., 76°08'17"W.; thence along the shore line to the point of beginning.

(2754) (2) The regulations. (i) Passage of vessels through the area will not be prohibited at any time, nor will commercial fishermen be prohibited from working fish nets within the area. No loitering or anchoring for other purposes will be permitted.

(2755) (ii) A large red warning flag will be flown on shore during periods when firing is in progress. Observers will be on duty and firing will be suspended for the passage of vessels and for the placing and maintenance of fish nets within the area.

(2756) (c) This section shall be enforced by the Commanding Officer, U.S. Naval Amphibious Base, Little Creek, Norfolk, Virginia.

TITLE 40–PROTECTION OF ENVIRONMENT

Part 140–Marine Sanitation Device Standard

§140.1 Definitions.

(2757) For the purpose of these standards the following definitions shall apply:

(2758) (a) Sewage means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes;

(2759) (b) Discharge includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping;

(2760) (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;

(2761) (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;

(2762) (e) New vessel refers to any vessel on which construction was initiated on or after January 30, 1975;

(2763) (f) Existing vessel refers to any vessel on which construction was initiated before January 30, 1975;

(2764) (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.

(2765) 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.

(2766) (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.

(2767) (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.

(2768) (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).

(2769) (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.

(2770) (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.

(2771) (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.

(2772) (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.

(2773) (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.

(2774) (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. [...]

(2775) (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. [...]

(2777) (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:

(2778) (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;

(2779) (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;

(2780) (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

(2781) (iv) Include a statement of basis justifying the size of the requested drinking water intake zone, for example, identifying areas of intensive boating activities.

(2782) (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.

(2783) (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.

(2784) (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):

(2785) (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.

(2786) (ii) [Reserved]

§140.5 Analytical procedures.

(2787) 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 46–SHIPPING

Part 15–Manning Requirements (in part)

Subpart I–Vessels in Foreign Trade

§15.1001 General.

(2788) Self-propelled vessels engaged in foreign commerce are required to use a pilot holding an appropriately endorsed Federal first class pilot's license issued by the Coast Guard when operating in the navigable waters of the United States specified in this subpart.

§15.1030 New York and New Jersey.

(2789) The following U.S. navigable waters located within the States of New York and New Jersey when the vessel is making an intra-port transit, to include, but not limited to, a movement from a dock to a dock, from a dock to an anchorage, from an anchorage to a dock, or from an anchorage to an anchorage, within the following listed operating areas:

(2790) (a) East River from Execution Rocks to New York Harbor, Upper Bay;

(2791) (b) Hudson River from Yonkers, New York to New York Harbor, Upper Bay;

(2792) (c) Raritan River from Grossman Dock/Arsenal to New York Harbor, Lower Bay;

(2793) (d) Arthur Kill Channel;

(2794) (e) Kill Van Kull Channel;

(2795) (f) Newark Bay;

(2796) (g) Passaic River from Point No Point to Newark Bay;

(2797) (h) Hackensack River from the turning basin to Newark Bay; and

(2798) (i) New York Harbor, Upper and Lower Bay.

(2799) Note to §15.1030:

(2800) "Intra-port transit" as used in this section includes the movement of a foreign-trade vessel inbound from sea from the point where a State-licensed pilot ceases providing pilotage to another point within the identified areas (i.e., a dock or anchorage). Likewise, intra-port transit also includes the movement of a foreign-trade vessel outbound to sea from a point within the identified areas (i.e., a dock or anchorage) to the point where a State licensed pilot begins providing pilotage.

§15.1040 Massachusetts.

(2801) The following U.S. navigable waters located within the State of Massachusetts when the vessel is in transit, but not bound to or departing from a port within the following listed operating areas:

(2802) (a) Cape Cod Bay south of 41°48'54"N.;

(2803) (b) The Cape Cod Canal; and

(2804) (c) Buzzards Bay east of a line extending from the southernmost point of Wilbur Point (41°34'55"N., 70°51'15"W.) to the easternmost point of Pasque Island (41°26'55"N., 70°50'30"W.).

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.

(2805) (a) The regulations of parts 222, 223, and 224 and 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 of 50 CFR part 23, chapter I.

(2806) (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).

(2807) (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.

(2808) (c) Approaching right whales.

(2809) (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:

(2810) (i) Approach (including by interception) within 500 yards (460 m) of a right whale by vessel, aircraft, or any other means;

(2811) (ii) Fail to undertake required right whale avoidance measures specified under paragraph (c)(2) of this section.

(2812) (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:

(2813) (i) If underway, a vessel must steer a course away from the right whale and immediately leave the area at slow safe speed.

(2814) (ii) An aircraft must take a course away from the right whale and immediately leave the area at a constant airspeed.

(2815) (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:

(2816) (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.

(2817) (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.

(2818) (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 to the approach.

(2819) (iv) Paragraphs (c)(1) and (c)(2) of this section do not apply to an aircraft unless the aircraft is conducting whale watch activities.

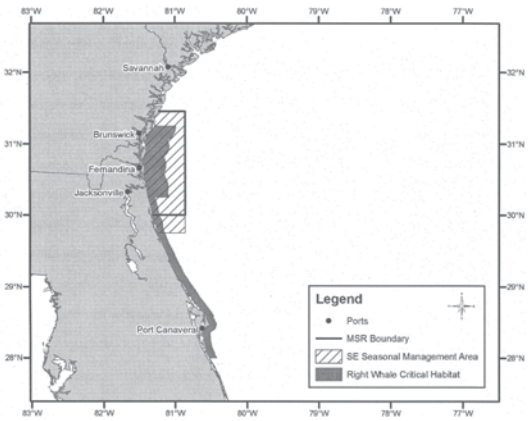
(2820) (v) Paragraph (c)(2) of this section does not apply to the extent that a vessel is restricted in her ability to maneuver and, because of the restriction, cannot comply with paragraph (c)(2) of this section.

§224.105 Speed restrictions to protect North Atlantic Right Whales.

(2821) (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.

(2822) (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).

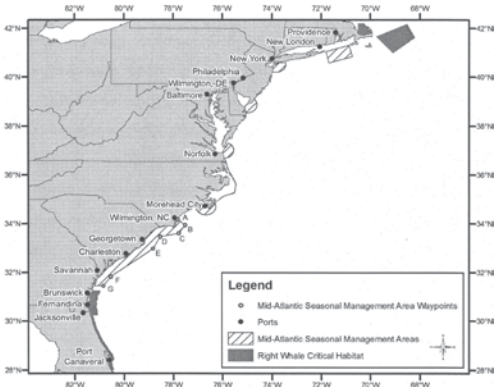
Figure 1. Southeast United States.



(2823) (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:

(2824) (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

Figure 2. Mid-Atlantic United States.



(2825) 31°27'00.0"N., 80°51'36.0"W.; thence to

(2826) 31°50'00.0"N., 80°33'12.0"W.; thence to

(2827) 32°59'06.0"N., 78°50'18.0"W.; thence to

(2828) 33°28'24.0"N., 78°32'30.0"W.; thence to

(2829) 33°36'30.0"N., 77°47'06.0"W.; thence back to starting point.;

(2830) (ii) Within a 20-nm (37 km) radius (as measured seaward from COLRGES delineated coast lines and the center point of the port entrance) (Fig. 2) at the

(2831) (A) Ports of New York/New Jersey:

(2832) 40°29'42.2"N., 73°55'57.6"W.;

(2833) (B) Delaware Bay (Ports of Philadelphia and Wilmington): 38°52'27.4"N., 75°01'32.1"W.;

(2834) (C) Entrance to the Chesapeake Bay (Ports of Hampton Roads and Baltimore): 37°00'36.9"N., 75°57'50.5"W.; and

(2835) (D) Ports of Morehead City and Beaufort, NC: 34°41'32.0"N., 76°40'08.3"W.; and

(2836) (iii) In Block Island Sound, in the area bounded by the following coordinates: Beginning at

(2837) 40°51'53.7"N., 70°36'44.9"W.; thence to

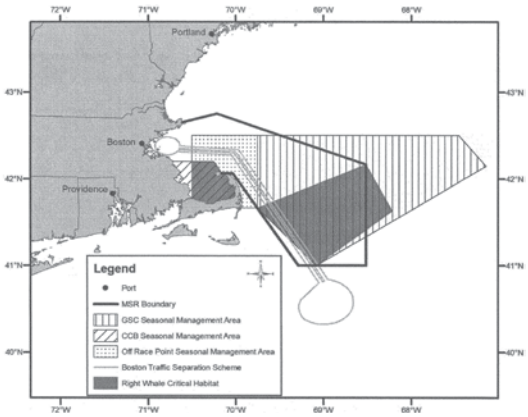
(2838) 41°20'14.1"N., 70°49'44.1"W.; thence to

(2839) 41°04'16.7"N., 71°51'21.0"W.; thence to

(2840) 40°35'56.5"N., 71°38'25.1"W.; thence back to starting point. (Fig. 2).

(2841) (3) Northeast U.S. (north of Rhode Island):

Figure 3. Northeast United States.



(2842) (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).

(2843) (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):

(2844) 42°30'00.0"N., 69°45'00.0"W.; thence to

(2845) 42°30'00.0"N., 70°30'00.0"W.; thence to

(2846) 42°12'00.0"N., 70°30'00.0"W.; thence to

(2847) 42°12'00.0"N., 70°12'00.0"W.; thence to

(2848) 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.

(2849) (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):

(2850) 42°30'00.0"N., 69°45'00.0"W.

(2851) 41°40'00.0"N., 69°45'00.0"W.

(2852) 41°00'00.0"N., 69°05'00.0"W.

(2853) 42°09'00.0"N., 67°08'24.0"W.

(2854) 42°30'00.0"N., 67°27'00.0"W.

(2855) 42°30'00.0"N., 69°45'00.0"W.

(2856) (b) Except as noted in paragraph (c) of this section, it is unlawful under this section:

(2857) (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

(2858) (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.

(2859) (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.

(2860) (d) This final rule expires on December 9, 2013.

Part 226–Designated Critical Habitat

§226.101 Purpose and scope.

(2861) 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 §224.101 of this chapter if endangered. For regulations pertaining to the designation of critical habitat, see part 424 of this title; for regulations pertaining to prohibitions against the adverse modification or destruction of critical habitat, see part 402 of this title. Additional information regarding designated critical habitats that is 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.

(2862) (a) Great South Channel. The area bounded by

(2863) 41°40'N., 69°45'W.;

(2864) 41°00'N., 69°05'W.;

(2865) 41°38'N., 68°13'W.; and

(2866) 42°10'N., 68°31'W.;

(2867) (b) Cape Cod Bay, Massachusetts. The area bounded by

(2868) 42°04.8'N., 70°10'W.;

(2869) 42°12'N., 70°15'W.;

(2870) 42°12'N., 70°30'W.;

(2871) 41°46.8'N., 70°30'W. and on the south and east by the interior shore line of Cape Cod, Massachusetts.

(2872) (c) Southeastern United States. The coastal waters between 31°15'N and 30°15'N from the coast out 15 nautical miles; and the costal waters between 30°15'N and 28°00'N from the coast out 5 nautical miles.

Sandy Hook to Cape Henry

(1) Between New York Bay and Delaware Bay is the New Jersey coast with its many resorts, its inlets, and its Intracoastal Waterway. Delaware Bay is the approach to Wilmington, Chester, Philadelphia, Camden, and Trenton; below Wilmington is the Delaware River entrance to the Chesapeake and Delaware Canal, the deep inside link between Chesapeake and Delaware Bays. The Delaware-Maryland-Virginia coast has relatively few resorts; the numerous inlets are backed by a shallow inside passage that extends all the way from Delaware Bay to Chesapeake Bay. The last seven chapters, nearly half of this book, are required to describe Chesapeake Bay to Norfolk and Newport News, to Washington and Baltimore, and to Susquehanna River 170 miles north of the Virginia Capes.

(2) A vessel approaching this coast from seaward will be made aware of its nearness by the number of vessels passing up and down in the coastal trade. The coast of New Jersey is studded with large hotels, prominent standpipes, and elevated tanks. South of Delaware Bay, the principal landmarks are the lighthouses and Coast Guard stations.

(3) The general tendency along this mostly sandy coast is for the ocean beaches and the points on the north sides of the entrances to wash away and for the points on the south sides of the entrances to build out. Protective works have done much to stabilize the New Jersey coast, but several lighthouses have been abandoned between Delaware Bay and Chesapeake Bay because of erosion.

(4) The shores of Delaware Bay and Delaware River are mostly low and have few conspicuous marks, other than lights, below the industrial centers along the river. The shores of Chesapeake Bay are low as far north as Patuxent River, then rise to considerable heights at the head of the bay.

Disposal Sites and Dumping Grounds

(5) These areas are rarely mentioned in the Coast Pilot, but are shown on the nautical charts. (See Disposal Sites and Dumping Grounds, chapter 1, and charts for limits.)

Aids to navigation

(6) Lights are numerous along the section of the coast covered by this Coast Pilot. Sound signals are at most of the principal light stations. Many coastal and harbor buoys are equipped with radar reflectors, which greatly increase the range at which the buoys may be detected on the radarscope. The critical dangers are marked.

Chesapeake Bay Interpretive Buoy System (CBIBS)

(7) The **Chesapeake Bay Interpretive Buoy System (CBIBS)** is a network of data-sensing buoys placed along portions of the Captain John Smith Chesapeake National Historic Trail. The buoys broadcast real-time weather and environmental data and voice narration of natural and cultural history of the area. Real-time information from the buoy can be retrieved by phone at 877-BUOYBAY, or by internet, www.buoybay.org. The following data buoys are within the CBIBS:

(8) Norfolk (36°50'40.1"N., 76°18'01.7"W.); Chart 12253

(9) Jamestown (37°12'15.0"N., 76°46'39.0"W.; Chart 12251

(10) Stingray Point (37°34'03.0"N., 76°15'44.4"W.); Chart 12235

(11) Potomac River-Pt. Lookout (38°02'00.0"N., 76°20'15.0"W.); Chart 12233

(12) Gooses Reef (38°33'22.5"N., 76°24'52.9"W.); Chart 12266

(13) Upper Potomac River (38°47'15.6"N., 77°02'08.3"W.); Chart 12285

(14) Annapolis (38°57'49.0"N., 76°26'48.4"W.); Chart 12283

(15) Patapsco River (39°09'06.8"N., 76°23'28.1"W.); Chart 12278

(16) Susquehanna (39°32'32.8"N., 76°04'29.7"W.); Chart 12274

Radar

(17) **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. Radar is of particular importance in detecting other traffic and in the prevention of collisions during periods of inclement weather, and in fog and low visibility.

COLREGS Demarcation Lines

(18) 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 Navigational 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

(19) (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.)

Regulated Navigation Areas

(20) **Regulated Navigation Areas** have been established within the navigable waters of the First Coast Guard District to increase operational safety for towing vessels and tank barges. (See **165.100**, chapter 2, for limit and regulations.)

Harbor and Inlet Entrances

(21) The channels into Delaware and Chesapeake Bays are broad and deep. The entrances to the inlets are comparatively shallow and are more or less obstructed by shifting sandbars. Some of the inlets have been improved by dredging and by the construction of jetties. On many of the bars the buoys are moved from time to time to mark the shifting channels. The best time to enter most of the inlets is on a rising tide with a smooth sea. Strangers should not attempt to enter the inlets without assistance when the seas are breaking on the bars. The tidal currents have considerable velocity in all of the entrances, and their direction is affected by the force and direction of the wind.

Traffic Separation Schemes

(22) **Traffic Separation Schemes (Traffic Lanes)** have been established at the entrances to New York Harbor, Delaware Bay and Chesapeake Bay, and in the main channel of Chesapeake Bay off Smith Point just south of the entrance to the Potomac River. (See chapters 4, 6, 9, and 12, respectively, for details.)

Anchorages

(23) The only protected anchorage for deep-draft vessels between New York Bay and Chesapeake Bay is outside the channel limits in Delaware Bay according to draft. Absecon Inlet, Cape May Inlet, and some of the others can accommodate light-draft vessels such as trawlers and small yachts, but not medium or deep drafts. Small local craft often seek shelter inside the shallower inlets, but entrance is difficult in heavy weather, and the unimproved inlets are often difficult even in good weather, particularly for strangers.

(24) 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.)

Marine Protected Areas

(25) The chapters that follow may contain references to Federally-designated Marine Protected Areas (MPAs) occurring in navigable coastal waters. 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.

(26) There are over 150 MPAs from New Jersey to Virginia. Most of these are small, nearshore MPAs managed by state agencies. Several large MPAs have been established in Federal waters to restore fisheries and protect habitat. Other Federal MPAs in the region include National Parks, such as Assateague Island National Park, and National Wildlife Refuges, including the Bombay Hook National Wildlife Refuge in Delaware Bay.

(27) 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/dataanalysis/mpainventory/ (Some of the major MPAs are listed below.)

(28) **Southern Nearshore Lobster Waters** includes waters along the continental shelf of the Mid-Atlantic coast from Long Island to Cape Hatteras.

(29) **Waters off New Jersey Closure** are located along the NJ and Long Island coasts extending N to RI and S to DE.

(30) **Mid-Atlantic Coastal Waters Area** includes coastal area between NY and NC/SC border.

(31) **Other Northeast Gillent Waters** Area includes large area off Mid-Atlantic and New England coastlines. In Mid-Atlantic area, includes waters east of 33°51'W.

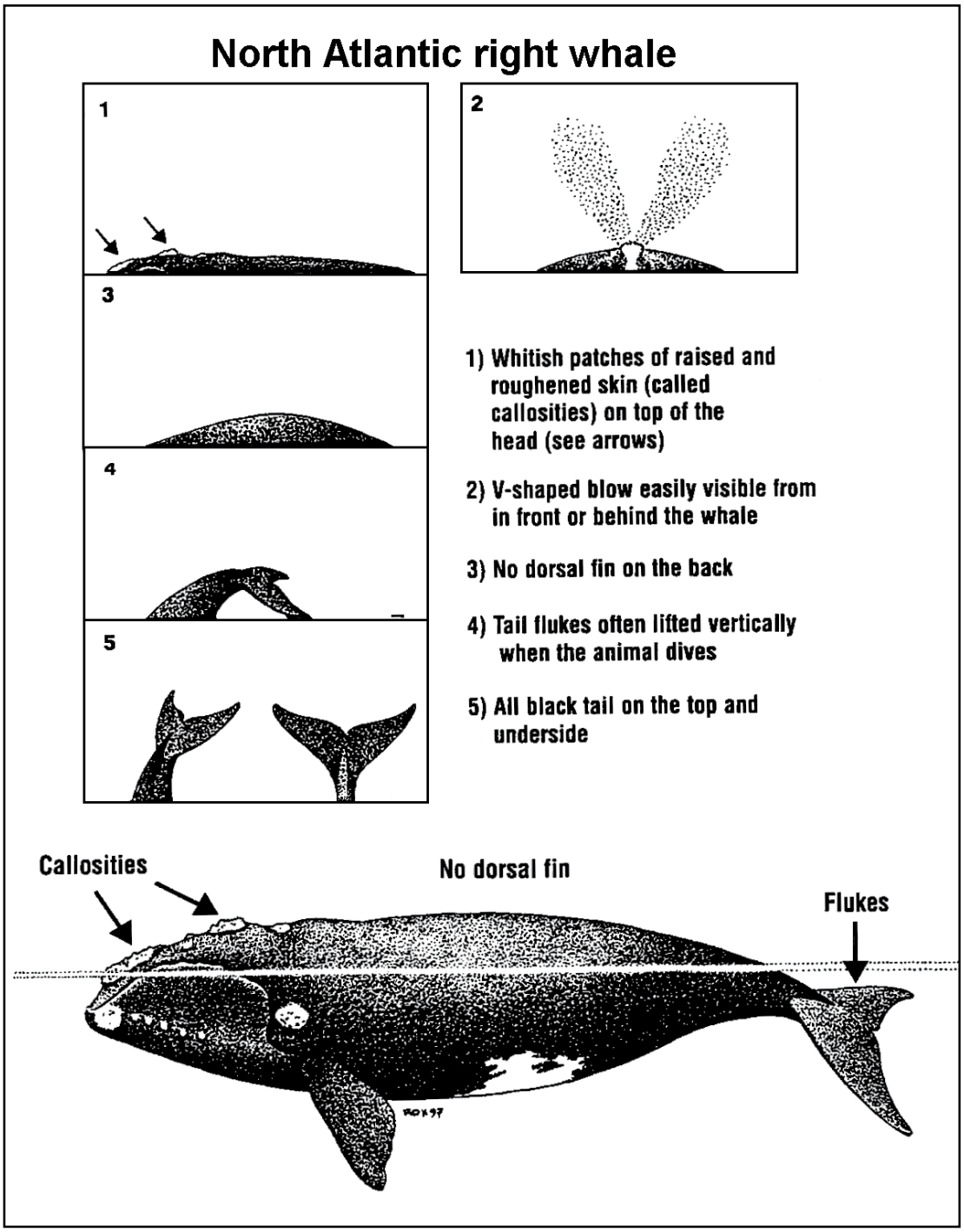
(32) **Offshore Lobster Waters**, about 60 miles offshore to the Exclusive Economic Zone (EEZ) edge, extend from the U.S./Canadian border to Cape Hatteras, NC.

(33) **Southern Mid-Atlantic Waters Closure** Area is bounded by DE coast on the N and NC/SC borders on the S.

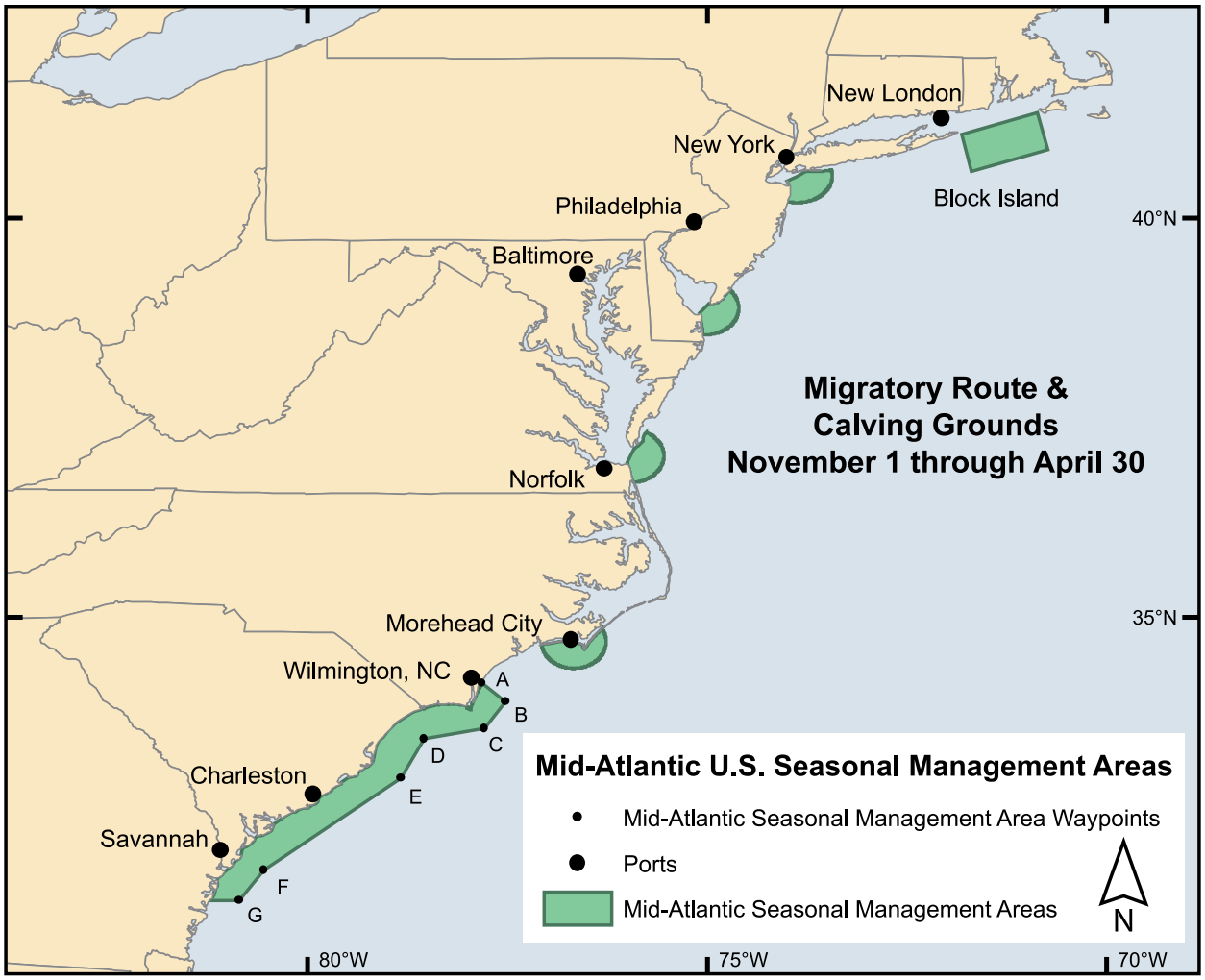
Dangers

(34) The principal dangers along this coast are the outlying sand shoals, the fogs, and the doubtful direction and velocity of the currents after heavy gales. Depths of 7.5 fathoms are found as far as 20 miles from shore. There are many wrecks along this coast, but most of them have been blasted off or cleared to safe navigational depths; the others are marked by obstruction buoys.

(35) Gales from northeast to southeast cause heavy breakers on the beaches and outlying shoals; the sea breaks in 4 to 5 fathoms of water, and shoals of that depth or less usually are marked during easterly gales. The bars across the inlets are then impassable and are defined by breakers even in comparatively smooth water with a light swell. The heaviest surf on the beach is on a rising tide near high-water springs; the least surf is encountered on a falling tide near low water. A very


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



heavy surf makes on the beaches after a southeasterly gale followed by a sudden shift of wind to northwest.

Danger zones

(36) **Danger zones** have been established within the area of this Coast Pilot. (See **Part 334,** chapter 2, for limits and regulations.)

North Atlantic Right Whales

(37) 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.)

(38) **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 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.

(39) **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 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.

(40) **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 map 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.) Boundaries of the SMAs are shown on NOAA Electronic Navigational Charts US2EC02M, US2EC03M, US2EC04M, and US2GC12M. 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:

(41) 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:

(42) 41°44'08"N., 69°34'50"W.;

(43) 42°10'00"N., 68°31'00"W.;

(44) 41°24'53"N., 68°31'00"W.; and

(45) 40°50'28"N., 68°58'40"W. between the period of April 1 through July 31.

(46) **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 an e-mail to ne.rw.sightings@noaa.gov (Northeast) or se.rw.sightings@noaa.gov (Southeast).

(47) **Precautions when transiting right whale habitat and areas of recently reported right whale sightings:**

(48) NOAA recommends the following precautionary measures be taken to avoid adverse interactions with North Atlantic right whales:

(49) 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.

(50) 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.

(51) 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.

(52) 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.)

(53) 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:

(54) location, date, and time of the accident or sighting of a carcass or an entangled whale,

(55) speed and course of the vessel,

(56) vessel specifications such as size and propulsion,

(57) water depth,

(58) environmental conditions such as visibility, wind speed and direction,

(59) description of the impact,

(60) fate of the animal, and

(61) species and size, if known.

(62) **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.

Mandatory Ship Reporting Systems (MSR) WHALESNORTH and WHALESSOUTH

(63) 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.

(64) 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.

(65) 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 Marine Safety Office of the U.S. Coast Guard.

(66) **Northeastern reporting system/Southeastern reporting system** (See **33 CFR 169.105 and 169.115**, chapter 2, for limits.)

(67) 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:

(68) Email: RightWhale.MSR@noaa.gov or Telex: 48156090.

(69) 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 800-742-8519x0. Vessels equipped only with VHF-FM voice communications should submit reports to the nearest U.S. Coast Guard activity or group.

(70) Example Reports:

(71) **WHALESNORTH**

(72) WHALESNORTH//

(73) M/487654321//

(74) A/CALYPSO/NRUS//

(75) B/031401Z APR//
(76) E/345//
(77) F/15.5//
(78) H/031410Z APR/4104N/06918W//
(79) I/BOSTON/032345Z APR//
(80) L/WP/4104N/06918W/15.5.//
(81) L/WP/4210N/06952W/15.5//
(82) L/WP/4230N/07006W/15.5//
(83) **WHALESSOUTH**
(84) WHALESSOUTH//
(85) M/412345678//
(86) A/BEAGLE/NVES//
(87) B/270810Z MAR//
(88) E/250//
(89) F/17.0//
(90) H/270810Z MAR/3030N/08052W//
(91) I/MAYPORT/271215Z MAR//
(92) L/RL/17.0//

(93) **Fishweirs** are numerous along the outside coast and in Chesapeake Bay and tributaries. The stakes often become broken off and form a hazard to navigation, especially at night. Regulations limiting the areas within which fishweirs may be established have been prescribed by the Chief of Engineers, U.S. Army. The areas within which fishweirs are permitted are shown on charts of 1: 80,000 scale and larger. The exact locations of the weirs within the designated areas are not shown.

(94) Along the outer coasts the limits of fishweir areas are not marked. In Chesapeake Bay and tributaries, black and white horizontal-banded buoys mark the turns of the limits. Strangers should proceed with caution when crossing areas of possible fishweirs, and should avoid crossing such areas at night.

Pipelaying barges

(95) 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 (156.80 MHz) for passage instructions.

Drawbridges

(96) 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.

(97) 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.

(98) The mariner should be acquainted with the general and specific regulations for drawbridges over waterways to be transited.

Routes

(99) Deep-draft vessels should stay outside of Barnegat Lighted Horn Buoy B and Five Fathom Bank Lighted Buoy F between New York Harbor and Delaware Bay, and outside Delaware Lighted Buoy D, Jack Spot Buoy 2JS (38°05.3'N., 74°45.1'W.), and Chesapeake Light between Delaware Bay and Chesapeake Bay. Traffic is heavy along this coast, and a sharp lookout must be kept to avoid collision. Vessels should approach Delaware Bay and Chesapeake Bay through the Traffic Separation Schemes that have been established off the entrances to these bays.

Inside Navigation

(100) 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.

Federal regulations

(101) (See **207.100,** chapter 7, for the regulations governing the use, administration and navigation of the Chesapeake and Delaware Canal.)

Bends and curves

(102) The New Jersey Intracoastal Waterway and adjoining waterways have 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 sheer from current action. This is even more pronounced with larger vessels and tows.

Cross currents

(103) Where two streams cross, the current will have a greater velocity in the deeper channel. This is noticeable

along the New Jersey 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 enter the waterway.

(104) Cross currents are especially strong at Beach Haven Inlet, Absecon Inlet, Townsend Inlet, and Tuckerton Creek. Failure to allow for cross currents when passing these and other inlets has resulted in many rescue calls to the Coast Guard.

Stumps and sunken logs

(105) 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

(106) On receiving an advisory notice of a tropical disturbance, small boats should seek shelter in a small winding stream whose banks are lined with trees, preferably trees with deep roots. 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 or other shallow-rooted trees, since they generally are more apt to be blown down.

Tides

(107) The mean range of tide is 3.4 to 4.4 feet along the coast. In passages away from the inlets, the range may be as little as 0.5 foot. In Delaware River the mean range reaches 6.8 feet at Trenton, while in Chesapeake Bay the mean range is only 1.1 feet at Baltimore.

Currents

(108) Rotary currents and Gulf Stream currents could be discussed at considerable length, but the important currents are those in the inlets and the inside passages; the tidal currents have considerable velocity in all of the entrances, and their direction is affected by the force and direction of the wind.

Ice

(109) The intracoastal passages of New Jersey, Delaware, and Maryland usually are closed by ice during ordinary winters; the Virginia passages are closed only during severe winters and then only for short periods. Local vessels use all the inlets and adjacent channels from Sandy Hook to Cape Charles all winter, even when through navigation is blocked.

(110) In Delaware River, ice is present in sufficient amounts even in ordinary winters to be of some concern. The Chesapeake and Delaware Canal is kept open as long as possible, but may be closed at times. In severe winters, navigation has been interrupted above Chester but tugs and large vessels keep the channels open to Philadelphia. Above Philadelphia, the river may be closed for extended periods in January and February, and navigation is practically suspended during severe winters.

(111) Ice seldom interferes with navigation of full-powered vessels in Hampton Roads even in severe winters. Large vessels can always pass up and down Chesapeake Bay, but ice jams are of frequent occurrence off Baltimore Harbor. The harbor itself sometimes freezes over and navigation may be blocked for small, low-powered vessels for limited periods.

(112) Conditions in other Chesapeake Bay tributaries are somewhat similar to those in the same latitudes along the coast. Ice is not much of a problem in the southerly tributaries. The upper part of Potomac River is closed during severe winters, and Patuxent River is closed nearly to the mouth. Severn River, strangely enough, is said to remain open except for short periods in severe winters. Susquehanna River, at the head of the bay, usually is completely closed for about 3 months. Ice conditions in the Eastern Shore tributaries correspond roughly to those across the bay.

(113) During some winter months or when threatened by icing conditions, lighted buoys may be removed from station or replaced by unlighted buoys; unlighted buoys, daybeacons, and lights on marine sites also may be removed. (See LIGHT LIST.)

(114) For icing hazards to vessels see Superstructure icing, following.

Weather

(115) Weather hazards can plague navigation along this stretch of coast in all seasons, whether sailing the open Atlantic or the more sheltered inland waterway.

(116) In this chapter, a brief seasonal overview of weather difficulties is followed by a summary of weather hazards and related problems. Detailed local weather problems are discussed in the appropriate chapters. Climatological summaries for coastal stations and marine areas can be found in the appendix.

(117) The area covered in this Coast Pilot is generally low and flat. Long stretches of sandy beaches and tidewater marshes characterize the New Jersey, Delaware, and Maryland ocean coasts. The eastern shore of Chesapeake Bay consists of low, flat, almost featureless plains, with numerous irregularities and small islands. The western shore is a gently rolling upland. Tidewater Virginia encompasses numerous flat peninsulas, wide estuaries, and many swamps. Topography farther inland rises in an irregular pattern of progressively higher northeast-southwest mountain ranges to the main Appalachian Mountains. Although some distance from the ocean, this mountain barrier exerts an important influence on the winter climatic pattern in the coastal area; it partly

blocks the cold continental air from the interior, and this combines with the moderating effect of the ocean to produce a more equable climate than is found in continental locations in the same latitude elsewhere.

(118) Winter navigation is restricted by extratropical storms that ravage the mid-Atlantic coast. These low pressure systems, which develop over the interior Gulf of Mexico and off the southeastern coast, usually move northward through east-northeastward, sweeping through the mid-Atlantic coast often accompanied by strong gusty winds and rain or snow. Highs from the interior usually follow the passage of these lows producing a pattern of rapidly changing air masses and variable winter weather from about November through March. There are marked temperature fluctuations and alternating periods of brief stormy weather, clear crisp days, and relatively mild conditions. A combination of strong winds, rough seas, and cold temperatures, can result in superstructure icing, where sea spray and sometimes precipitation can freeze to a ship's superstructure. This adds tremendous weight and creates dangerous instability.

(119) In spring a semipermanent fair weather system known as the Bermuda High, although still centered far to the southeast, begins to influence the southeast coast. The Middle Atlantic area is usually outside its circulation and is still subject to the passage of extratropical cyclones, frontal activity, and changing air masses. Warm rainy spells alternate with cool dry weather. Fog becomes a problem when warm air flows across still cold water.

(120) By early summer, the Bermuda High has built northward and westward, embracing the entire eastern seaboard with its circulation. It is responsible for the warm humid southerly flow that prevails. When it persists, the Bermuda High can block low pressure systems from the continent, providing a week or two of typical summertime weather, warm temperatures, high humidity, light to moderate southerly and southwesterly winds, and showers and thunderstorms. When pressure gradients are weak an alternating land-sea breeze is common along the coast. Summer is also the start of the hurricane season.

(121) The threat of tropical storms and hurricanes continues in autumn as the Bermuda High begins to shift southward and eastward and weaken. This leaves the coast under the influence of a weak continental high that gradually gives way to the winter weather pattern of increased frontal activity, winter storms, and migratory high pressure systems. While autumn brings a battle for control of the weather, these are mainly periods of dry sunny days and cool clear nights. During these periods there is the possibility of radiation type fog, forming inland at night and drifting out along the coast in the early morning. This fog is more localized than the spring advection fog and usually burns off before noon.

Climatological tables

(122) Climatological tables for coastal localities, and meteorological tables for the coastal ocean areas covered in this volume follow the appendix. The meteorological tables were compiled from observations made by ships in passage. Listed in the appendix are National Weather Service offices and radio stations which transmit weather information. The **Marine Weather Services Charts**, which contain additional important information, are available from the National Aeronautical Charting Office, AJW-3550, Federal Aviation Administration. (See Appendix A for address.)

Superstructure icing

(123) In certain weather conditions, ice accumulating on hulls and superstructures can be a serious danger to ships. Ice accumulation may occur from three causes:

(124) (a) Fog with freezing conditions;

(125) (b) Freezing rain or drizzle;

(126) (c) Sea spray or seas breaking over the ship when the air temperature is below the freezing point of seawater (about 28.6°F, -1.89°C).

(127) Ice accumulation from the first two causes, if appreciable, could induce enough damage to the rigging to cause it to fall. This is minor, however, in comparison with the weight of the ice accumulated in rough weather and low temperatures, when large amounts of spray and often heavy seas break over a vessel. When the air temperature is below the freezing point of sea water and the ship is in heavy seas, considerable amounts of water will freeze to the superstructure and those parts of the hull which are sufficiently above the waterline to escape being frequently washed by the sea. The amounts frozen to surfaces exposed to the air will rapidly increase with falling air and sea temperatures, and might in extreme cases lead to capsizing of the vessel. The dangerous conditions are those in which gale-force winds last for several days in association with air temperatures of 28°F (-2.2°C) or lower. These conditions will normally occur when the wind comes from the northern quadrants. Indications of when these conditions are likely to occur can often be obtained by observing the rate of fall of the barometer, at the onset of strengthening winds from a cold quarter, together with observations of air and sea temperatures.

(128) Superstructure icing at its worst can sink a small vessel. It elevates the center of gravity, decreasing the metacentric height. Icing increases the sail area and the heeling moment due to wind action. Its non-uniform distribution changes the trim; it can hamper steerability and lower ship speed. Icing can also cause hazardous deck conditions.

Pressure

(129) The pressure pattern changes considerably from summer to winter. At individual stations along the coast, however, the differences of mean annual pressure are quite small. The highest monthly mean pressure

occurs during the winter and the lowest in late spring and early summer. Large short-term variations of pressure are occasionally experienced during tropical cyclones in the late summer and autumn, and during the movement of extratropical cyclones and anticyclones in the winter and spring. The day-to-day changes of pressure in summer are less marked and average lower than in winter.

Winds

(130) Prevailing winds at most stations are from northwest during the cooler months, October through March, and from the southwest, May through September. The average wind speeds during the warmer months are generally lower than during the colder seasons, because of the absence of extratropical cyclones. Highest average speeds occur in March and lowest in August.

(131) In the winter, the winds over the open ocean are slightly stronger than those over land. Little difference is apparent in summer. In the warmer season, a daily shift in wind direction occurs when the region is not under the influence of cyclonic storms. During the warmer part of the day winds blow onshore, and during the cooler part, offshore. This land-sea breeze seldom penetrates more than a few miles inland.

(132) Gales (force 8 or higher) are reported in about 6 percent of ships' observations in winter. Gales are generally from the westerly quadrants. Summer gales are rare, but may be encountered during tropical cyclones or local thunderstorms.

Temperatures

(133) Along the Middle Atlantic Coast temperatures are generally moderate. Mean annual temperatures range from 55.1°F (12.8°C) at Philadelphia to 60.1°F (15.6°C) at Norfolk. The lowest mean monthly temperature is 31.1°F (-0.5°C) at Trenton in January; the highest, 79.4°F (26.3°C) at Norfolk in July. January is the coldest month and July the warmest. Over the open water areas, January mean air temperatures may be several degrees warmer than at coastal points, and in July they may be a few degrees cooler. Over land surfaces, the air warms and cools readily, but over water it does so slowly and relatively little. Land surfaces absorb heat in only a thin surface layer and give it up freely, while water absorbs heat to substantial depths and retains it longer.

(134) The daily temperature range averages from 10° to 20°F (12.2° to 6.7°C) throughout the year, and is generally much less over the water. Readings in the coastal areas rarely exceed 100°F (37.8°C), and the 90°F (32.2°C) level is reached on only one-third to one-half of the days during summer. Freezing temperatures (< 0°C) are probable on one-half or more of the days from November through March, except from Maryland southward where the average is about one in three. Below-zero readings (< -17.8°C) have been recorded during December, January, and February at most stations, except Dover where no reading below 0°F (-17.8°C) has ever been observed.

(135) Sea-surface temperatures are warmer than air temperatures most of the time, ranging from 4° to 7°F (15.6° to 13.9°C) warmer in winter to about the same temperature in the spring.

Relative humidity

(136) Throughout the year the relative humidity is high, averaging from 64 to 90 percent at 0700 and from 46 to 62 percent at 1900. Humidities usually are higher with onshore winds (blowing from sea toward land) and lower with offshore winds (blowing from land toward sea).

Cargo care

(137) High humidities and temperature extremes can be encountered navigating the East Coast and may cause sweat damage to cargo. This problem is most likely when cargoes are loaded in warm summer air or can occur anytime temperatures fluctuate rapidly.

(138) When free air has a higher dewpoint than the temperature of the surface with which it comes in contact, the air is often cooled sufficiently below its dewpoint to release moisture. When this happens condensation will occur on board ship either on relatively cool cargo or on the ship's structure within the hold, where it drips onto the cargo. If cargo is stowed in a cool climate and the vessel sails into warmer waters, ventilation of the hold with outside air can lead to sweat damage of any moisture sensitive cargo. Unless the cargo generates internal heat, then as a rule, external ventilation should be shut off. When a vessel is loaded in warm weather and moves into a cooler region, vulnerable cargo should be ventilated.

(139) In general, whenever accurate readings show the outside air has a dewpoint below the dewpoint of the air surrounding the vulnerable cargo, such outside air is capable of removing moisture and ventilation may be started. However, if the outside dewpoint is higher than the dewpoint around the cargo, ventilation will increase moisture and result in sweating. This generality does not take into account the possibility of necessary venting for gases or fumes.

Cloudiness and precipitation

(140) At sea in winter, overcast conditions (cloud amount 0.8 or more) are recorded in 45 to 50 percent of observations, while clear conditions (0.2 or less) are recorded in about 30 percent. In summer, some 30 to 35 percent of observations show overcast and an equal percent, clear skies. The least cloudiness occurs when the air is dominated by the Bermuda High in late summer and early autumn, and the greatest cloudiness during the frequent winter cyclones. In the coastal area, from one-third to one-half the days are overcast in winter, and 25 to 35 percent in summer.

(141) Precipitation over the coastal sections is moderately heavy and well distributed. Normal monthly totals vary from minima of about 2.5 to 3.0 inches (64 to 76 mm) in February or October to maxima of 4.5 to 6.0 inches (114 to 152 mm) in August. Annual totals range between 41 and 45 inches (1041 and 1143 mm). Summer thunderstorms are most frequent over land and near coastal waters in the afternoon; at night they are more frequent over open water. Thunderstorm rainfall is less intense over the ocean, but can severely restrict visibility. Snow may be expected from November through March; maximum fall is in January and February. Snow usually does not remain on the ground for extended periods. On rare occasions, freezing rain, or glaze, is encountered; if prolonged, it can cause damage to rigging. Snow at sea is little more than a severe restriction to visibility.

Visibility

(142) Although generally good, visibility can be hampered by fog, precipitation, haze and smoke. Fog is usually the most restrictive. It is most likely over open waters in spring and early summer when warm moist air moves across still cool waters. Off the coast from March through June, this advection fog restricts visibility to less than 0.5 mile (0.80 km), 3 to 8 percent of the time. Visibilities fall below 2 miles (3.2 km), 5 to 12 percent of the time during this period. While advection fog sometimes drifts onshore, radiation fog in autumn and winter is more common just inland. Radiation fog forms on calm, clear nights and may drift over water during the early morning hours. It usually burns off by noon. At coastal locations visibilities fall below 0.25 mile (0.40 km) about 2 to 5 days per month from September through March; some locations suffer through June if they are exposed to sea fog. Smoke and haze by themselves rarely reduce visibilities below 2 miles (3.2 km) but precipitation can briefly, particularly in heavy showers.

Thunderstorms

(143) While they can develop in any month, thunderstorms are most likely from May through October. They can occur in squall lines or a single cell; stirring a breeze or creating gusts to 100 knots. Thunderstorms can spring up rapidly or be tracked for several days; bring gentle showers or a torrential downpour. Thunderstorms can harbor a tornado or waterspout and produce vivid lightning displays. The number of thunderstorms can vary from year to year, but on the average they can be expected on 4 to 10 days per month from May through August.

(144) Along the coast and over the bays, thunderstorms are most likely from midafternoon through the evening. These are the typical air mass thunderstorms that result from warm moist air being heated and forced to rise. Cold fronts can also generate thunderstorms and often squall lines, which can occur at any time. When thunderstorms coincide with the time of maximum daily heating, they are most violent. In spring and early summer, thunderstorms usually develop to the west and southwest and approach at 20 to 35 knots; they are often severe. As summer progresses air mass thunderstorms are more likely. These form to the west and east of Chesapeake Bay and move eastward at about 10 to 20 knots.

Tropical Cyclones

(145) Tropical storms and hurricanes are an infrequent but dangerous threat to navigation. At sea, winds can reach 175 knots or more and waves of 35 to 40 feet (11 to 12 m) are likely; in an intense storm the waves may exceed 50 feet (15 m). On the coast, storm tides as much as 17 feet (5 m) or more above mean sea level are possible as is rainfall of 15 inches (381 mm) or more. A tropical cyclone is a warm-core, low-pressure system that develops over the warm waters of the tropical oceans, and exhibits a rotary, counterclockwise circulation in the Northern Hemisphere (clockwise in the Southern Hemisphere). Tropical cyclones occur almost entirely in six rather distinct regions of the world; one of these, the **North Atlantic Region** (West Indies, Caribbean Sea, Gulf of Mexico, and waters off the east coast of the United States), includes the area covered by this Coast Pilot. In this region, tropical cyclones with winds of 34 to 63 knots are called **tropical storms,** while tropical cyclones with winds greater than 63 knots are called hurricanes. **Hurricanes** are infrequent in comparison with middle-and high-latitude storms, but they have a record of destruction far exceeding that of any other type of storm. Because of their fury, and the fact that they are predominately oceanic, they merit the special attention of all mariners, whether professional or amateur.

(146) While tropical cyclones can occur at any time, they are most likely from June through early November. Along this section of the coast their greatest frequency occurs from mid-August through September. They are often in the process of recurving and tend to parallel the coastline. The most dangerous storms are those that move slowly northward and remain just off the coast. Fortunately, tropical cyclones tend to accelerate as they move into higher latitudes; forward speeds of 20 to 30 knots are not uncommon.

(147) Rarely does the mariner who has experienced a fully developed tropical cyclone (hurricane) at sea wish to encounter a second one. He has learned the wisdom of avoiding them if possible. The uninitiated may be misled by the deceptively small size of a tropical cyclone as it appears on a weather map, and by the fine weather experienced only a few hundred miles from the reported center of such a storm. The rapidity with which the weather can deteriorate with approach of the storm, and the violence of the hurricane, are difficult to visualize if they have not been experienced.

(148) As a tropical cyclone moves out of the Tropics to higher latitudes, it normally loses energy slowly, expanding in area until it gradually dissipates or acquires the characteristics of extratropical cyclones. At any stage, a tropical cyclone normally loses energy at a much faster rate if it moves over land. As a general rule, tropical cyclones of the North Atlantic Region move with the prevailing winds of the area. In small hurricanes the diameter of the area of destructive winds may not exceed 25 miles (40 km) while in some of the greatest storms the diameter may be as much as 400 to 500 miles (644 to 805 km).

(149) At the center is a comparative calm known as the **eye** of the storm. The diameter of this eye varies with individual storms and may be as little as 7 miles (11 km), but is rarely more than 30 miles (48 km). The average is 15 to 20 miles (24 to 32 km). This center is the region of low atmospheric pressure around which winds blow in a more or less circular course, spiraling inward in a counterclockwise direction. Winds at the outer edge of the storm area are light to moderate and gusty, and often increase toward the center to speeds too high for instrument recording. Although the air movement near the center of the hurricane is usually light and fitful, the seas in this area are in most cases very heavy and confused, rendered so by the violent shifting winds which surround it. Furthermore, after the center has passed a vessel, she may expect a sharp renewal of the gales, with winds from a more or less opposite direction. The hurricane may affect an area covering tens of thousands of square miles.

(150) In an average year over the entire North Atlantic (including the Caribbean Sea and the Gulf of Mexico) about nine or ten tropical cyclones come to life and about six of these reach hurricane strength. They usually form over a wide range of ocean between the Cape Verde Islands and the Windward Islands, over the western Caribbean Sea, and in the Gulf of Mexico. While some may initially move northward most take a westerly to northwesterly course. Of these, some curve gradually northward either east or north of the larger islands of the West Indies, then finally turn northeastward or eastward off the U.S. Atlantic coast.

(151) A considerable number, however, remain in low latitudes and do not turn appreciably to the northward. 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.

(152) Hurricanes develop over the southern portions of the North Atlantic, including the Gulf of Mexico, and Caribbean Sea, **mostly from June through October, infrequently in May and November, and rarely in other months;** the hurricane season reaches its peak in September. An average of nine tropical cyclones form each year (reaching at least tropical storm intensity), and five of these reach hurricane strength. June and July storms tend to develop in the northwestern Caribbean or Gulf of Mexico; during August there is an increase in number and intensity, and the area of formation extends east of the Lesser Antilles. September storms develop between 50° W and the Lesser Antilles, in the southern Gulf of Mexico, the western Caribbean, near the Bahamas, and around the Cape Verde Islands. Formation in October shifts primarily to the western Caribbean, and off-season storms are widespread with a slight concentration in the southwestern Caribbean.

(153) The average speed of movement of tropical cyclones in the Tropics is about 10 to 15 knots. This speed, however, varies considerably according to the location of the storm, its development, and attendant meteorological conditions. The highest rates of progression usually occur when the storm is moving northward or northeastward in the middle or higher latitudes.

Extratropical cyclones

(154) These winter-type storms, while abundant all year, are most intense from fall through spring. Along this coast they are often known as "Nor'easters". They can generate hurricane-force winds and can vary in size from 100 miles to nearly 1,000 miles (160 to 1,600 km) in diameter. Waves generated by these storms commonly exceed 40 feet (12 m) and have been reported at more than 60 feet (18 m) in the open ocean. Like tropical cyclones, they can devastate the shore, rearrange the coastal topography, and cause extensive flooding.

(155) These storms generally move into this region from the west or southwest. Those from the Gulf of Mexico area are usually more intense because of their overwater route. They often intensify off Cape Hatteras before sweeping northeastward. Heavy rain or snow before the passage of the storm center may be extensive. After the center passes, northwesterly winds coming from the interior may be strong and cold. The classic "Nor'easter" is so called because winds over the coastal area are out of the northeast. They may occur at any time, but are most frequent and violent between September and April. They often develop off the mid-Atlantic coast and head northeastward toward New England.

Locating and tracking tropical cyclones

(156) By means of radio, the National Weather Service collects weather observations daily from land stations, ships at sea, and aircraft. When a tropical cyclone is located, usually in its early formative stage, it is followed closely. In the North Atlantic, U.S. Navy, Air Force, and NOAA aircraft make frequent flights to the vicinity of such storms to provide information needed for tracking the tropical cyclone and determining its intensity. Long-range shore radar stations follow the movement of the storm's precipitation area when it is in range. Bulletins are broadcast to ships several times daily, giving

information on each storm's location, intensity, and movement. As a further aid, the mariner may obtain weather reports by radio directly from other ships in the vicinity of a tropical cyclone.

Signs of approach

(157) Although radio reports normally prove adequate for locating and avoiding a tropical cyclone, knowledge of the appearance of the sea and sky in the vicinity of such a storm is useful to the mariner. The passage of a hurricane at sea is an experience not soon to be forgotten.

(158) An early indication of the approach of such a storm is the presence of a long swell. In the absence of a tropical cyclone, the crests of swell in the deep waters of the Atlantic pass at the rate of perhaps eight per minute. Swell generated by a tropical cyclone is about twice as long, the crests passing at the rate of perhaps four per minute. Swell may be observed several days before arrival of the storm.

(159) When the storm center is 500 to 1,000 miles away, the barometer usually rises a little, and the skies are relatively clear. Cumulus clouds, if present at all, are few in number, and their vertical development appears suppressed. The barometer usually appears restless, pumping up and down a few hundredths of an inch.

(160) As the tropical cyclone comes nearer, a cloud sequence begins which resembles that associated with the approach of a warm front in middle latitudes. Snowwhite, fibrous "mare's tails" (cirrus) appear when the storm is about 300 to 600 miles away. Usually these seem to converge, more or less, in the direction from which the storm is approaching. This convergence is particularly apparent at about the time of sunrise and sunset.

(161) Shortly after the cirrus appears, but sometimes before, the barometer starts a long, slow fall. At first the fall is so gradual that it only appears to alter somewhat the normal daily cycle (two maximums and two minimums in the Tropics). As the rate of fall increases, the daily pattern is completely lost in the more or less steady fall.

(162) The cirrus becomes more confused and tangled, and then gradually gives way to a continuous veil of cirrostratus. Below this veil, altostratus forms, and then stratocumulus. These clouds gradually become more dense, and as they do so, the weather becomes unsettled. A fine, mistlike rain begins to fall, interrupted from time to time by showers. The barometer has fallen perhaps a tenth of an inch.

(163) As the fall becomes more rapid, the wind increases in gustiness, and its speed becomes greater, reaching a value of perhaps 22 to 40 knots (Beaufort 6-8). On the horizon appears a dark wall of heavy cumulonimbus, the **bar** of the storm. Portions of this heavy cloud become detached from time to time and drift across the sky, accompanied by rain squalls and wind of increasing speed. Between squalls, the cirrostratus can be seen through breaks in the stratocumulus.

(164) As the bar approaches, the barometer falls more rapidly and wind speed increases. The seas, which have been gradually mounting, become tempestuous and, squall lines, one after the other, sweep past in ever increasing number and intensity.

(165) With the arrival of the bar, the day becomes very dark, squalls become virtually continuous, and the barometer falls precipitously, with a rapid increase in the wind speed. The center may still be 100 to 200 miles away in a hurricane. As the center of the storm comes closer, the ever-stronger wind shrieks through the rigging and about the superstructure of the vessel. As the center approaches, rain falls in torrents. The wind fury increases. The seas become mountainous. The tops of huge waves are blown off to mingle with the rain and fill the air with water. Objects at a short distance are not visible. Even the largest and most seaworthy vessels become virtually unmanageable, and may sustain heavy damage. Less sturdy vessels do not survive. Navigation virtually stops as safety of the vessel becomes the prime consideration. The awesome fury of this condition can only be experienced. Words are inadequate to describe it.

(166) If the eye of the storm passes over the vessel, the winds suddenly drop to a breeze as the wall of the eye passes. The rain stops, and skies clear sufficiently to permit the sun to shine through holes in the comparatively thin cloud cover. Visibility improves. Mountainous seas approach from all sides, apparently in complete confusion. The barometer reaches its lowest point, which may be 1.5 to 2 inches below normal in hurricanes. As the wall on the opposite side of the eye arrives, the full fury of the wind strikes as suddenly as it ceased, but from the opposite direction. The sequence of conditions that occurred during approach of the storm is reversed, and pass more quickly, as the various parts of the storm are not as wide in the rear of a storm as on its forward side.

Locating the center of a tropical cyclone

(167) If intelligent action is to be taken to avoid the full fury of a tropical cyclone, early determination of its location and direction of travel relative to the vessel is essential. The bulletins and forecasts are an excellent general guide, but they are not infallible and may be sufficiently in error to induce a mariner in a critical position to alter course so as to unwittingly increase the danger of the vessel. Often it is possible, using only those observations made aboard ship, to obtain a sufficiently close approximation to enable the vessel to maneuver to the best advantage.

(168) As previously stated, the presence of an exceptionally long swell is usually the first visible indication of the existence of a tropical cyclone. In deep water it approaches from the general direction of origin (the position of the storm center when the swell was generated). However, in shoaling water this is a less reliable

indication because the direction is changed by refraction, the crests being more nearly parallel to the bottom contours.

(169) When the cirrus clouds appear, their point of convergence provides an indication of the direction of the storm center. If the storm is to pass well to one side of the observer, the point of convergence shifts slowly in the direction of storm movement. If the storm center will pass near the observer, this point remains steady. When the bar becomes visible, it appears to rest upon the horizon for several hours. The darkest part of this cloud is in the direction of the storm center. If the storm is to pass to one side, the bar appears to drift slowly along the horizon. If the storm is heading directly toward the observer, the position of the bar remains fixed. Once within the area of the dense, low clouds, one should observe their direction of movement, which is almost exactly along the isobars, with the center of the storm being 90° from the direction of cloud movement (left of direction of movement in the Northern Hemisphere).

(170) The winds are probably the best guide to the direction of the center of a tropical cyclone. The circulation is cyclonic, but because of the steep pressure gradient near the center, the winds there blow with greater violence and are more nearly circular than in extratropical cyclones.

(171) According to Buys Ballot's law, an observer who faces into the wind has the center of the low pressure on his right (Northern Hemisphere) and somewhat behind him. If the wind followed circular isobars exactly, the center would be exactly eight points, or 90°, from dead ahead when facing into the wind. However, the track of the wind is usually inclined somewhat toward the center, so that the angle dead ahead varies between perhaps 8 and 12 points (90° to 135°). The inclination varies in different parts of the same storm. It is least in front of the storm, and greatest in the rear, since the actual wind is the vector sum of that due to the pressure gradient and the motion of the storm along the track. A good average is perhaps ten points in front, and 11 or 12 points in the rear. These values apply when the storm center is still several hundred miles away. Closer to the center, the wind blows more nearly along the isobars, the inclination being reduced by one or two points at the wall of the eye. Since wind direction usually shifts temporarily during a squall, its direction at this time should not be used for determining the position of the center.

(172) When the center is within radar range, it might be located by this equipment. However, since the radar return is predominately from the rain, results can be deceptive, and other indications should not be neglected.

(173) Distance from the storm center is more difficult to determine than direction. Radar is perhaps the best guide. The rate of fall of the barometer is of some help; this is only a rough indication, however, for the rate of fall may be quite erratic and will vary somewhat with the depth of the low at the center, the speed of the storm center along its track, and the stage in the life cycle of the storm.

Maneuvering to avoid the storm center

(174) The safest procedure with respect to tropical cyclones is to avoid them. With the aid of ship observations, satellite information and computers, there is ample warning time, usually 24 to 48 hours, to prepare for the approach of a tropical cyclone along this coast. These warnings are given wide distribution by commercial radio and television, Coast Guard and NOAA weather radio, and by visual displays whenever winds, weather, sea conditions or storm tides are expected to be a hazard to marine operations. If action is taken sufficiently early, this is simply a matter of setting a course that will take the vessel well to one side of the probable track of the storm, and then continuing to plot the position of the storm center, as given in the weather bulletins, revising the course as needed. Detailed information on the vulnerability of North Atlantic ports to hurricanes may be found in 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. Additional local information may be found in the individual chapters of this book.

(175) However, such action is not always possible. If one finds himself within the storm area, the proper action to take depends in part upon his position relative to the storm center and its direction of travel. It is customary to divide the circular area of the storm into two parts. In the Northern Hemisphere, that part 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 part to the **left** of the storm track is called the **navigable semicircle.** In this part, the wind is decreased by the forward motion of the storm, and the wind blows vessels away from the storm track (in the forward part). Because of the greater wind speed in the dangerous semicircle, the seas are higher here than in the navigable semicircle.

(176) A plot of successive positions of the storm center should indicate the semicircle in which a vessel is located. However, if this is based upon weather bulletins, it is not a reliable guide because of the lag between the observations upon which the bulletin is based and the time of reception of the bulletin, with the ever present possibility of a change in the direction of motion of the storm. The use of radar eliminates this lag, but the return is not always a true indication of the center. Perhaps the most reliable guide is the wind. Within the cyclonic circulation, a **veering wind** (one changing direction to the right in the Northern Hemisphere and to the left in

the Southern Hemisphere) indicates a position in the dangerous semicircle, and a **backing wind** (one changing in a direction opposite to a veering wind) indicates a position in the navigable semicircle. However, if a vessel is underway, its motion should be considered. If it is outrunning the storm or pulling rapidly toward one side (which is not difficult during the early stages of a storm, when its speed is low), the opposite effect occurs. This should usually be accompanied by a rise in atmospheric pressure, but if motion of the vessel is nearly along an isobar, this may not be a reliable indication. If in doubt, the safest action is usually to stop long enough to determine definitely the semicircle. The loss in valuable time may be more than offset by the minimizing of the possibility of taking the wrong action and increasing the danger to the vessel. If the wind direction remains steady (for a vessel which has stopped), with increasing speed and falling barometer, the vessel is in or near the path of the storm. If it remains steady with decreasing speed and rising barometer, the vessel is on the storm track, behind the center.

(177) The first action to take if one finds himself within the cyclonic circulation, is to determine the position of his vessel with respect to the storm center. **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 approach nearer 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.

(178) As a very general rule, for a vessel in the Northern Hemisphere, safety lies in placing the wind on the starboard bow in the dangerous semicircle and on the starboard quarter in the navigable semicircle. If on the storm track ahead of the storm, the wind should be put about two points on the starboard quarter until the vessel is well within the navigable semicircle, and the rule for that semicircle then followed. With a faster than average vessel, the wind can be brought a little farther aft in each case. However, as the speed of the storm increases along its track, the wind should be brought farther forward. If land interferes with what would otherwise be the best maneuver, the solution should be altered to fit the circumstances. If the speed of the vessel is greater than that of the storm, it is possible for the vessel, if behind the storm, to overtake it. In this case, the only action usually needed is to slow enough to let the storm pull ahead.

(179) 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 pole. If the storm maintains its direction and speed, the ship's course should be maintained as the wind shifts.

(180) If it becomes necessary for a vessel to heave to, the characteristics of the vessel should be considered. A power vessel 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 greatest amount of headway away from the storm center, and 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, but never in the forward half of the dangerous semicircle. 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.

(181) 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.

Practical rules

(182) When there are indications of a hurricane, vessels should remain in port or seek one if possible. Changes in barometer and wind should be carefully observed and recorded, and every precaution should be taken to avert damage by striking light spars, strengthening moorings, and if a steamer, preparing steam to assist the moorings. In the ports of the southern States hurricanes are generally accompanied by very high tides, and vessels may be endangered by overriding the wharf where moored if the position is at all exposed.

(183) Vessels in the Straits of Florida may not have sea room to maneuver so as to avoid the storm track, and should try to make a harbor, or to stand out of the straits to obtain sea room. Vessels unable to reach a port and having sea room to maneuver usually observe the previously discussed general rules for avoiding the storm center, which, for power-driven vessels, are summarized as follows:

(184) **Right or dangerous semicircle**.–Bring the wind 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.

(185) **Left or navigable semicircle**.–Bring the wind on 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.

(186) **On storm track, ahead of center**.–Bring the wind two points on the starboard quarter (157.5° relative), hold course, and make as much way as possible. When

well within the navigable semicircle, maneuver as indicated above.

(187) **On storm track, behind center**.–Avoid the center by the best practicable course, keeping in mind the tendency of tropical cyclones to curve northward and eastward.

Coastal effects

(188) Along the coast, water may inflict greater damage than wind. The storm tide is the result of the tropical cyclone's pressure and wind on the normal astronomical tide. When these forces occur simultaneously with a normal high tide the resultant flooding can be devastating. Add to that the unusually high seas generated by the storm and there is the potential for a disaster. Aids to navigation may be blown out of position or destroyed. Craft in harbors, unless properly secured, may drag anchor and/or be blown against obstructions.

(189) When proceeding along a shore recently visited by a hurricane, a navigator should remember that time is required to restore aids to navigation which have been blown out of position or destroyed. In some instances the aid may remain, but its light, or sound apparatus may be inoperative. Landmarks may have been damaged or destroyed.

Dangerous waves along the Gulf Stream

(190) Winter and spring storms passing over the Gulf Stream along the east coast of the United States may be modified rapidly enough to create dangerous wind and wave situations. This is particularly true in the North Wall, a narrow band of extreme horizontal water temperature change that marks the northern edge of the Gulf Stream. In early winter, cold air outbreaks along this northern edge sometimes result in a doubling of the wind speed of surrounding seas. During February and March the waters north of the Gulf Stream are at their coldest while the Gulf Stream remains relatively warm. Also, from the North Wall to 10 to 20 miles into the Gulf Stream, strong northeasterly currents are encountered. The strong northeasterly winds of intense coastal storms tend to pull cold Arctic air across the slope water to near Cape Hatteras. As this cold air reaches the Gulf Stream it encounters rapidly increasing sea surface temperatures. This sudden warming produces an increase in wind speeds and gustiness. In turn, this causes higher and confused seas. In addition, these northeasterly seas encounter opposing currents of 3 to 5 knots resulting in a sharp increase in wave heights and much steeper wave slopes. Waves may even break. This action causes problems for small craft navigating inlets in waves of only a few feet in height. With 20- to 30-foot seas the result is dangerous to any ship. To avoid this problem it is often best in late winter and spring to cross the Gulf Stream as far east as possible, since the cold air should be modified somewhat, reducing the instability effect.

Principal ports

(191) The ports within the area of this Coast Pilot which have deep-draft commercial traffic are Delaware City, DE; Wilmington, DE; Marcus Hook, PA; Chester, PA; Philadelphia, PA; Gloucester City, NJ; Atlantic City, NJ; Camden, NJ; Trenton, NJ; Norfolk, VA; Portsmouth, VA; Newport News, VA; Richmond, VA; Piney Point, MD; Alexandria, VA; Cove Point, MD; Cambridge, MD; and Baltimore, MD.

Pilotage, General

(192) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in the foreign trade. Pilotage is optional for coastwise vessels that have on board a pilot properly licensed by the Federal Government for the waters which the vessel travels.

(193) The Maryland Pilots maintain a pilot station at Cape Henry; Virginia State pilots maintain a pilot station at Cape Henry; pilots for Delaware Bay and River maintain a pilot station at Cape Henlopen; Maryland State pilots and pilots for Delaware Bay and River also maintain a joint pilot station at Chesapeake City, MD, on the Chesapeake and Delaware Canal.

(194) The Chesapeake and Interstate Pilots Association offers pilotage to U.S. vessels engaged in the coastwise trade. Pilotage is also available to public vessels. The association serves vessels transiting Chesapeake Bay and its tributaries, Chesapeake and Delaware Canal, and Delaware Bay and River. Chesapeake and Interstate Pilots Association has an office in Norfolk (telephone, 757-855-2733).

(195) The Interport Pilots Agency, Inc. offers pilotage to public vessels and private vessels in the coastal trade transiting the Delaware Bay and River, Chesapeake and Delaware Canal, Upper Chesapeake Bay, New York Harbor, Long Island Sound and other areas along the northeast coast. Arrangements for their services are made 24 hours in advance through the ship's agents or by contacting Interport Pilots Agency, Inc., 906 Port Monmouth Road, Port Monmouth, NJ 07758-0236, telephone 732-787-5554 (24 hours), or by e-mail at interport@verizon.net. Additional information about Interport Pilots can be obtained at http://www.interportpilots.com.

(196) Pilotage is available for foreign vessels and U.S. vessels under register, for all ports on the New Jersey seacoast from Sandy Hook to, and including Atlantic City, from the Sandy Hook Pilot Association, 201 Edgewater Street, Staten Island, NY 10305.

(197) Telephone 718-448-3900, FAX 718-447-1582;

(198) Email: PILOTOFFICE@sandyhookpilots.com. A 24-hour advance notice is required.

(199) All pilot associations provide 24-hour service. Arrangements for pilots should be made well in advance through ships' agents.

(200) Detailed information on pilotage procedures is given in the text for the ports concerned.

Towage

(201) Tugs are available at all 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 ships' agents or the pilots. (See the text for the ports concerned as to the availability of tugs.)

Dead Ship Tows

(202) The Captain of the Port (COTP) Delaware Bay has determined that a dead ship is a hazardous condition and that special attention needs to be paid to the movement of these vessels. Responsible parties, their surveyors and towing companies maintain ultimate responsibility for conducting a safe tow. The authority to control, approve, and monitor dead ship tows is derived from Title 33, Code of Federal Regulations (CFR), Part 160.111 (c) and Part 160.215. (See Chapter 2 of this Coast Pilot.)

(203) **Requirements to ensure a safe dead ship tow** within or transiting through Sector Delaware Bay Regulated Navigation Area, Title 33 CFR, Part 165.510 (see Chapter 2 of this Coast Pilot):

(204) 1. Towing companies (excluding commercial salvage companies) contracted to conduct a dead-ship tow of any commercial, Department of Defense (DOD), ex-commercial or ex-DOD vessel (regardless of length) must submit a proposal to the Coast Guard Sector Delaware Bay Waterways Management Branch. For vessels being towed within the port, the proposal must be submitted at least **48 hours** before the start of the towing operation. If the vessel is to be towed out of port, the proposal must be submitted at least **5 days** in advance. Proposals may be submitted via fax at 215-271-4903 during business hours, or 215-271-4833 after business hours. A follow-up telephone call to 215-271-4889 during business hours or 215-271-4807 after business hours is required to ensure the proposal was received. When received, the Sector will evaluate the proposal and send a return letter by fax. If a tow of more than one dead-ship is planned, a more detailed tow plan must be submitted to the Sector for approval.

(205) 2. Depending on the particulars of the vessel being towed (age, extended lay up status, vessel condition, etc.), the COTP Delaware Bay may require that additional safety precautions be established before the tow is authorized. This may include requirements such as obtaining a marine surveyor's report attesting to the vessel's seaworthiness for the desired tow or allowing a representative from Sector Delaware Bay to examine the vessel to verify seaworthiness, pollution potential, and the adequacy of the towing arrangement. Nothing in this policy relieves the vessel owner or agent from any of the requirements regarding vessel safety and the protection of the environment specified in the applicable sections of 46 CFR "Shipping", and 33 CFR "Navigation and Navigable Waters." (See Chapter 2 of this Coast Pilot.)

(206) 3. Once the tow begins, the licensed person-in-charge is responsible for the safe execution of the dead-ship tow. This includes ensuring adequate under keel clearance over the route and adequate vertical clearance when passing under overhead obstructions. Additionally, the monitoring of the tow's stability and structural adequacy throughout the tow is the responsibility of the person-in-charge.

(207) 4. Approval for a dead-ship tow will be voided if any changes are made to the information submitted with the original request.

(208) 5. Sector Delaware Bay will issue a Notice to Mariners that will be broadcast on VHF-FM Channel 16 while the dead-ship tow is being conducted in the COTP Delaware Bay zone to advise other vessels to use caution when in the vicinity of the tow.

Vessel Arrival Inspections

(209) 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.

(210) **Harbormasters**, if available, are mentioned in the text. They generally have charge of the anchorage and berthing of vessels.

Supplies

(211) Water, marine supplies, other supplies and services, and all grades of heavy bunker oil, lubricants, and diesel oil are available to large vessels at Hampton Roads ports, Baltimore, and other major ports along the Delaware Bay and River.

(212) Gasoline, diesel fuel, water, and marine supplies and services can also be obtained at most of the smaller ports.

Repairs

(213) Large oceangoing vessels can be drydocked and have major repair work done at Philadelphia, Chester, Baltimore, Newport News, Norfolk, and Portsmouth. Repair facilities for smaller vessels are also available at many places in the area covered by this Coast Pilot. (See text.)

(214) Wrecking and salvage equipment is available at Philadelphia, Baltimore, and Norfolk.

Small-craft facilities

(215) Marine supplies, repair facilities, and other services for small craft are available at all the major ports, at numerous places on the New Jersey Intracoastal Waterway, and on many of the tributaries of the Chesapeake and Delaware Bays. 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.

(216) **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

(217) 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 at Philadelphia, PA.

Daylight saving time

(218) 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

(219) 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.

(220) In the areas covered by this Coast Pilot, other holidays are observed: Lee-Jackson Day, Friday preceding the third Monday in January, in Virginia; Presidential Inauguration Day, January 20, every fourth year in the District of Columbia; Lincoln's Birthday, February 12, in all states except Virginia; Good Friday, in Delaware, New Jersey, Pennsylvania, and Maryland; Maryland Day, March 25, in Maryland; Flag Day, June 14, in Pennsylvania; Defender's Day, September 12, in Maryland; General Election Day, first Tuesday after the first Monday in November, except in the District of Columbia.

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(see catalog for complete coverage)
NEW YORK
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MANASQUAN INLET
Toms River
NEW JERSEY
BARNEGAT BAY
BARNEGAT INLET
MULLICA RIVER
LITTLE EGG INLET
12323
Atlantic City
ABSECON INLET
GREAT EGG HARBOR INLET
Ocean City
NORTH
ATLANTIC OCEAN
12316
HEREFORD INLET
12318
CAPE MAY INLET
Cape May
12317
75°
74°30'
74°
73°30'
40° 30'
40°
39° 30'
39°

New Jersey Coast

(1) This chapter describes the coast of New Jersey from Sandy Hook to Cape May Point, and the various inlets which make into it from the Atlantic Ocean. Also discussed are the resort towns of Atlantic City, Ocean City, and Cape May.

Charts 12326, 12323, 12318, 12304, 12214

(2) The coast of New Jersey extends in a general southerly direction for 44 miles from Sandy Hook to Barnegat Inlet, then southwesterly for 66 miles to Cape May Point. From Sandy Hook to Atlantic City the 60-foot curve is 5 to 10 miles from shore; off Delaware Bay the distance has increased to 17 miles.

(3) Deep-draft vessels should stand off the coast in depths of 60 feet or more between New York Bay and Delaware Bay. Light-draft vessels can follow the shore more closely if they pay strict attention to the charts for fishweir areas, shoals, wrecks, and other obstructions. Small craft should wait for favorable weather before attempting an outside run along this coast.

(4) The principal shallow-draft entrances are Shark River Inlet, Manasquan Inlet, Barnegat Inlet, Absecon Inlet, and Cape May Inlet. There are several others that are unimproved. The inlets are, or may be, obstructed by shifting bars, and most require local knowledge to carry the best water. The best time to enter is on a rising tide with a smooth sea; passage is hazardous during easterly gales and heavy seas.

(5) In most cases the aids marking the various inlets are not charted due to the changing conditions.

(6) The greater part of the New Jersey coast is summer-resort area, and the numerous standpipes and elevated tanks are prominent from seaward. The New Jersey Intracoastal Waterway, an inside passage from Manasquan Inlet to Delaware Bay, is described in chapter 5.

North Atlantic Right Whales

(7) Endangered North Atlantic right whales may occur within 30 nautical miles of the New Jersey coast (peak season: November through April, although right whales have been sighted in the area year round). (See **North Atlantic Right Whales**, indexed as such in Chapter 3, for more information on right whales and recommended measures to avoid collisions.)

(8) 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 Seasonal Management Area existing around the Ports of New York/New Jersey between November 1 and April 30. The area is defined as the waters within a 20-nm radius of 40°29'42.2"N., 73°55'57.6"W. (See **50 CFR 224.105** in Chapter 2 for regulations, limitations, and exceptions.)

COLREGS Demarcation Lines

(9) The lines established for New York Harbor and the inlets of the New Jersey coast are described **80.165, 80.170, and 80.501**, chapter 2.

Traffic Separation Scheme

(10) **Traffic Separation Scheme off New York** has been established in the approaches to New York Harbor from sea. (See charts 12300, 12326, and **Traffic Separation Schemes**, chapter 1, for additional information.) (See also **167.1 through 167.155**, chapter 2, for limits and regulations.)

(11) **Caution**.–Numerous fishing floats have been reported in the approach to New York Harbor in the Traffic Separation Scheme precautionary area.

(12) Shipping safety fairways have been established connecting the eastern approach off Ambrose of Traffic Separation Scheme Off New York and the eastern approach off Nantucket of Traffic Separation Scheme Off New York. (See **166.100 through 166.500**, chapter 2, for limits and regulations.)

Weather

(13) Strong winds are most often a problem from November through March. Gales (winds of 34 knots or more) are encountered 3 to 5 percent of the time in these waters; they blow most frequently out of the northwest although northerlies and northeasterlies can also create problems. They are slightly more frequent in the stretch of ocean between Atlantic City and Cape May. In open waters, on the average, extreme winds can be expected to reach 70 to 75 knots compared to 60 to 70 knots in the inland waterway. Summer gales are rare but may be encountered in a thunderstorm or infrequent tropical cyclone. Along the coast strong winds (28 to 40 knots) blow 10 percent of the time in winter compared to less than 1 percent in summer.

(14) Seas are roughest from September to March. In January waves of 8 feet (2.4 m) or more are encountered about 15 to 25 percent of the time in deep waters. Rough seas are most likely with west and northwest winds of 20 knots or more and have reached 40 feet (12.2 m). While fog, haze, precipitation and smoke can hamper visibility,

it is most restricted by advection fog. This occurs most often in late spring and early summer when warm south to southwest winds blow across the cold Labrador Current. May is usually the worst month, when visibilities less than 0.5 mile (0.8 km) are encountered 4 to 9 percent of the time and less than 2 miles (3.2 km) 5 to 15 percent of the time; highest frequencies occur nearest the New York Bight. Along the coast, visibilities less than 0.25 mile (0.4 km) occur on 3 to 6 days per month from October through March. This is a combination of radiation fog, precipitation and smoke.

Pilotage, New Jersey Coast

(15) Pilotage is compulsory for foreign vessels and U.S. vessels under register. Pilotage is available from the Sandy Hook Pilot Association, 201 Edgewater Street, Staten Island, NY 10305, telephone 718-448-3900, FAX 718-447-1582, email: pilotoffice@sandyhookpilots.com. Arrangement for pilotage may be made through ship's agents or directly. A 24-hour advance notice is required.

Chart 12326

(16) Low **Sandy Hook** on the south side of the entrance to **New York Harbor,** is the most northerly part of the New Jersey coast. **Sandy Hook Light** (40°27'42"N., 74°00'06"W.), 88 feet above the water, is shown from an 85-foot stone tower 1.2 miles from the north end of the point. The light, established in 1764, is the oldest in continuous use in the United States.

(17) **Sandy Hook Coast Guard Station**, a standpipe, several towers, and two marine lights are prominent on the northern part of the hook. (See Appendix B for the **New York** and **Newark climatological tables**.)

(18) Sandy Hook is a Government reservation, and landing is prohibited as far south, approximately, as the bridge over the mouth of Shrewsbury River. Vessels awaiting favorable weather for an outside run can anchor in Sandy Hook Bay south of a line bearing due west from Sandy Hook Light.

(19) **Sandy Hook Bay**, **Navesink River**, and **Shrewsbury River** are described in United States Coast Pilot 2, Atlantic Coast, Cape Cod to Sandy Hook.

(20) On the northwest side of the approach to Navesink River is the highest ground along the open Atlantic Coast between Maine and Florida. The 276-foot wooded ridge is 4 miles south of Sandy Hook Light and 0.5 mile back of the outer beach. Abandoned **Navesink Lighthouse** (40°23'48"N., 73°59'12"W.), is in a cleared space on the easternmost spur at a ground elevation of 180 feet; the two 73-foot brownstone towers, the north one octagonal and the south square, are connected by a dwelling. A privately maintained light, 246 feet above the water, is now shown seasonally from the north tower.

(21) **Shrewsbury Rocks**, 7.3 miles south of Sandy Hook Light, are 0.4 to a mile offshore and have a least depth of 14 feet; buoys are eastward of the rocks.

(22) The sea **boundary** between the First and Fifth Coast Guard Districts is on a line **122°** from 40°18'N on the New Jersey coast south of Shrewsbury Rocks.

Chart 12324

(23) **Shark River**, which enters Shark Inlet 17 miles south of Sandy Hook Light, is the only small-craft harbor between Sandy Hook and Manasquan Inlet. The town of **Avon** fronts the ocean on the north side of the river, and **Belmar** is on the south side.

(24) **Shark River Inlet** is protected by jetties, each marked by a light near its outer end. **Shark River Coast Guard Station** is on the north side of the river, about 0.3 mile above the jetties.

(25) A dredged channel leads through the inlet and river to the Belmar Municipal Boat Basin 1.2 miles above the jetties. In 2010-2011, the controlling depth was 12.5 feet in the jetty channel to the Ocean Avenue Bridge, thence 5.5 feet to the State Route 35 highway bridge, thence 4.1 feet (6.8 feet at midchannel) to Belmar Municipal Boat Basin. An anchorage is just east of State Route 71 highway bridge; 1.6 to 12 feet was available in 2010. An anchorage is just east of State Route 71 highway bridge. The State of New Jersey maintains and marks several channels through the flats north and west of the boat basin.

(26) In stormy weather, breakers form along the bar off the inlet, but entrance can be made in moderately rough weather with some local knowledge. When the winds and the tides are opposed, the inlet is difficult to enter. A cross current, strongest on the ebb, may be encountered at Ocean Avenue Bridge at the inner end of the jetties. Vessels for which the closed bridge clearance is insufficient should not attempt entrance until the drawspan is completely open.

(27) Three bascule drawbridges cross the main channel of Shark River. Ocean Avenue Bridge, just inside the jetties, has a clearance of 15 feet, State Route 71 highway bridge, about 0.8 mile above the jetties, has a clearance of 13 feet and the New York and Long Branch Company Bridge 0.1 mile above State Route 71 highway bridge, has a clearance of 8 feet. (See **117.1 through 117.59 and 117.751**, chapter 2, for drawbridge regulations.) The bridgetender for the highway and railroad bascule bridges monitor VHF-FM channel 13; call signs KMD-281 and KT-4202 respectively, with the latter serving as the call sign for the State Route 71 highway bridge and the railroad bridge. A fixed highway bridge with a clearance of 50 feet crosses the main channel immediately westward of the railroad bridge.

(28) The fixed spans of State Route 71 and State Route 35 highway bridges, and of the New York and Long Branch Railroad Company Bridge, cross the upper

reach or north channel of Shark River at about the same distances above the jetties as the bascule spans of these bridges; least clearances are 35 feet horizontal and 8 feet vertical.

(29) Overhead power cables cross the north channel of Shark River close eastward of the New York and Long Branch Railroad Company Bridge and close westward of State Route 35 highway bridge; least clearance is 32 feet.

(30) There are excellent small-craft and fishing-boat facilities in Shark River inside the inlet. Most of these facilities are on both sides and above the inner bridges, and in the Belmar Municipal Boat basin. (See the small-craft facilities tabulation on chart 12324 for supplies and services available.)

Pilotage, Shark River Inlet

(31) Pilotage is compulsory for foreign vessels and U.S. vessels under register. Pilotage is available from the Sandy Hook Pilot Association, 201 Edgewater Street, Staten Island, NY 10305, telephone 718-448-3900, FAX 718-876-8055, email: pilotoffice@sandyhookpilots.com. Arrangements for pilotage may be made through ship's agents or directly. A 24-hour advance notice is required.

Chart 12324

(32) **Manasquan Inlet**, 22 miles southward of Sandy Hook Light, is the Atlantic entrance to Manasquan River and the northern terminus of the New Jersey Intracoastal Waterway, which are described in chapter 5. **Manasquan Inlet Coast Guard Station** is on the south side of the inlet.

(33) The north jetty is marked by a light on its outer end. The south jetty is marked by a light near the outer end; a sound signal is at the south jetty light. Give the jetties a good berth to avoid any loose rocks.

(34) A marked dredged channel leads through Manasquan Inlet and extends about 5 miles up **Manasquan River**. In 2011, the midchannel controlling depth was 7 feet in the inlet to the first bridge; thence in 1997–1998, 2 feet to a point just N of the entrance to Point Pleasant Canal; thence in 1967, reported centerline depths of 6 feet to the third bridge; thence in 1986, 2.5 feet (4 feet at midchannel) for about 0.7 mile from the third bridge, thence about 1 foot on the centerline to the head of the project.

(35) The current velocity in Manasquan Inlet is about 1.8 knots in the inlet.

(36) Traffic conditions in Manasquan Inlet can be hazardous due to the large volume of commercial and pleasure boat traffic. Mariners are advised to exercise caution and control speed and wake while transiting

Barnegat Inlet, New Jersey
Image courtesy of Waterway Images (2004)

the inlet. The Coast Guard monitors traffic in the inlet and safe boating is enforced.

(37) Mariners should exercise caution when entering Manasquan Inlet when the winds and tides are opposed; local knowledge is advised.

Pilotage, Manasquan Inlet

(38) Pilotage is compulsory for foreign vessels and U.S. vessels under register. Pilotage is available from the Sandy Hook Pilot Association, 201 Edgewater Street, Staten Island, NY 10305, telephone 718-448-3900, FAX 718-876-8055, e-mail: pilotoffice@sandyhookpilots.com. Arrangements for pilotage may be made through ship's agents or directly. A 24-hour advance notice is required.

Charts 12323, 12324

(39) **Bay Head**, 2 miles south of Manasquan Inlet, is marked by a prominent elevated water tank. From Bay Head south, the resorts are more widely spaced on the low, narrow barrier beach which separates the inside waters from the ocean.

(40) **Barnegat Inlet**, 21 miles southward of Manasquan Inlet, forms a passage from the Atlantic Ocean through **Oyster Creek Channel** to the New Jersey Intracoastal Waterway and Barnegat Bay. The approach to the inlet is marked by a lighted whistle buoy about 1.7 miles SE of the N jetty. The inlet is protected by two jetties marked by lights. A sound signal is at the south jetty light. Two orange and white danger buoys are NE of the N jetty to mark the submerged jetty between Light 6 and the exposed jetty. Buoys inside the channel are moved frequently and not charted. **Barnegat Light** (39°45'51"N., 74°06'22"W.), on the south side of the inlet, is the most prominent landmark in the area; it is a 163-foot-high brick tower, dark red on its upper half and white on its lower half. The lighted tower is maintained by the State of New Jersey as a historical monument. Also prominent from seaward is a 391-foot-high powerplant stack at the head of Oyster Creek, on the west side of Barnegat Bay.

(41) Barnegat Inlet Channel and Oyster Creek Channel are subject to continual change due to severe shoaling. The buoys marking these channels are shifted frequently to mark the best water and therefore are not charted. Mariners are advised to use caution and local knowledge. It was reported that various aids marking Oyster Creek Channel may be submerged because of strong tidal currents. Breakers make across the inlet with an ebb tide and an easterly wind. Strangers should not attempt to transit the inlet under any but ideal conditions. Boatmen needing assistance should lay outside the inlet and contact the local Coast Guard station.

(42) The current velocity in Barnegat Inlet is about 2.5 knots in the inlet, although currents as high as 7 knots have been reported.

Absecon Inlet, New Jersey
Image courtesy of Waterway Images (2004)

(43) **Barnegat Light** is a resort town on the south side of Barnegat Inlet. The channel to the small-craft and fishing-boat facilities on the bay side of the town is marked by privately maintained seasonal buoys or markers; these aids are not charted. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

Charts 12323, 12316

(44) **Beach Haven Inlet** (39°30.0'N., 74°15.1'W.), 17 miles south-southwestward of Barnegat Inlet, is unmarked. Numerous wrecks and shoal spots are at the entrance. Due to changing conditions of the channel, boatmen are advised to seek local knowledge prior to entering.

(45) The entrance to Beach Haven Inlet should not be mistaken for Little Egg Inlet, which is close southward. **Beach Haven Coast Guard Station** is inside the barrier beach, 3.2 miles north of Beach Haven Inlet.

Charts 12318, 12316

(46) **Little Egg Inlet** (39°29.0'N., 74°17.5'W.), 19 miles south-southwestward of Barnegat Inlet and close southward of Beach Haven Inlet, is used considerably by local pleasure and fishing boats. Depth over the bar is ample for any vessel that can navigate the inside waters, but in very heavy weather breakers form all the way across the bar. The inlet channels and shoreline are constantly changing; the entrance is well marked, but the buoys are not charted because they are frequently shifted in position. In 2007, an unmarked partially submerged wreck was reported at about 39°29'09.6"N., 74°17'31.2"W.; caution is advised.

(47) **Brigantine Inlet**, 2.6 miles south-southwestward of Little Egg Inlet, has shoaled to such an extent that it is unsafe for even the shallowest drafts. **Brigantine Shoal,** 3 miles south of the inlet, has a least depth of 18 feet.

(48) **Absecon Inlet**, 8.7 miles southwestward of Little Egg Inlet, is on the northeast side of **Atlantic City,** the largest resort on the New Jersey coast. The inlet is protected at the entrance by jetties; a revetment extends along the Atlantic City side of the inlet. Small-craft facilities are available at a hotel marina on the southwest side of the inlet.

(49) The entrance channel is subject to continual change; the buoys are frequently shifted to **Clam Creek** marking the best water and therefore are not charted. The channel through the inlet intersects the New Jersey Intracoastal Waterway 1.9 miles above the inlet entrance south jetty. The New Jersey Intracoastal Waterway is described in Chapter 5. In 2007, the controlling depth was 9.5 feet to Clam Creek; thence in 2009, 3.0 feet in Clam Creek entrance channel with shoaling to lesser depths in the north half of the channel, with depths of 10.9 to

Great Egg Harbor Inlet, New Jersey
Image courtesy of Waterway Images (2004)

15.0 feet in the basin. Current velocities up to 6 knots have been reported in the channel.

Weather

(50) The climate of Atlantic City is principally continental in character; however, the moderating influence of the Atlantic Ocean is apparent throughout the year. As a result, the summers are relatively cooler and winters milder than elsewhere at the same latitude. Land and sea breezes often prevail. Temperatures of 90°F (32.2°C) or higher are recorded about three times per year, which are considerably less than locations further inland. The weather tends to remain comparatively mild late into the fall, but on the other hand, warming is retarded in the spring.

(51) January is the coldest month and July the warmest. The average annual temperature for Atlantic City is 53.7°F (12.1°C). The average January temperature is 31.7°F (-0.2°C) and the average July temperature is 75.3°F (24.1°C). Temperatures in excess of 100°F (37.8°C) have occurred in each month, June through August, and temperatures in excess of 90°F (32.2°C) have occurred in each month, April through October. Each month has recorded below freezing temperatures except June, July, and August and each month, December through February, has recorded temperatures below 0°F (-17.8°C). The warmest temperature on record for Atlantic City is 106°F (41.1°C) recorded in June 1969 while the coldest temperature on record is -11°F (-23.9°C) recorded in February 1979.

(52) Precipitation, on the average, is moderate and well distributed throughout the year, with June the driest month and August the wettest. The average annual precipitation for Atlantic City is 41 inches (1041 mm). Thunderstorms are mostly a warm season phenomena. The bulk of winter precipitation results from storms which move northeasterly along or close to the coast. Snowfall, at about 17 inches (432 mm) per year, is considerably less than elsewhere at the same latitude, and does not remain long on the ground. Snow has fallen in each month, October through May. The greatest 24-hour snowfall was 16.6 (421.6 mm) recorded in February 1979. Ice storms are relatively infrequent. (See Appendix B for **Atlantic City climatological table**.)

(53) Since 1950, seven tropical storms have approached Atlantic City, all from the south. No major damage has been reported however, 8-feet storm tides were noted with Hurricane Donna in 1960.

(54) **Atlantic City**, on the south side of Absecon Inlet, is a base for a large fleet of fishing vessels and pleasure craft. The city has highway, rail, and air connections with the mainland; highways lead to the coastal towns northward and southward.

Pilotage, Atlantic City

(55) Pilotage is compulsory for foreign vessels and U.S. vessels under register. Pilotage is available from the

Cape May Inlet, New Jersey
Image courtesy of Waterway Images (2004)

Sandy Hook Pilot Association, 201 Edgewater Street, Staten Island, NY 10305, telephone 718-448-3900, FAX 718-876-8055, e-mail: pilotoffice@sandyhookpilots.com. Arrangements for pilotage may be made through ship's agents or directly. A 24-hour advance notice is required.

Coast Guard

(56) **Atlantic City Coast Guard Station** is on the north side of the entrance to Clam Creek.

(57) **Clam Creek**, on the south side of Absecon Inlet, has its marked entrance 1 mile northwestward of the south jetty light. The creek includes **Gardner Basin, Snug Harbor,** and **Delta Basin** on its southerly side, and the small-boat basin of the State marina on its northerly side. The municipal wharf is on the east side of the entrance to the small-boat basin.

(58) Gasoline, diesel fuel, water, ice, and marine supplies can be obtained at the several small-craft facilities in the creek and in the small-boat basin. Hull and engine repairs can be made at the facilities in Gardner Basin and Snug Harbor; maximum haul-out capacities are: marine railway, 65 feet; lift, 20 tons. The **harbormaster** at the State marina assigns slips in the small-boat basin; a fuel float is on the west side of the basin, and the harbormaster's office is on the east side.

(59) The highway bridge, 1.5 miles above Absecon Inlet entrance, has a fixed span with a clearance of 60 feet. Two fishing piers, the remains of a former bascule bridge, are about 50 yards northward of the bridge. Care must be exercised when passing through this bridge, because of the strong currents; velocities of 2.5 knots have been reported.

(60) **Great Egg Harbor Inlet**, 7 miles southwest of Absecon Inlet, is subject to continual change due to severe shoaling. The buoys marking the inlet are not charted because they are shifted frequently to mark the best water. The inlet is used by many local fishing and pleasure boats with drafts up to 5 feet. Breakers extend along the bar even in moderate weather and are hazardous to small boats. Local knowledge is advised at all times in entering the inlet. The bridges, just inside Great Egg Harbor Inlet, are described in chapter 5 in connection with the New Jersey Intracoastal Waterway.

(61) **Ocean City**, a large summer resort on the southwest side of Great Egg Harbor Inlet, has highway connections with the mainland. Supplies and facilities are described in connection with the New Jersey Intracoastal Waterway. **Great Egg Coast Guard Station** is in a basin on the inner side of the city.

(62) **Corson Inlet**, 14 miles southwest of Absecon Inlet, is subject to constant change in depth and should not be used.

(63) A shoal, covered 16 feet and marked by a buoy, is 3.8 miles east of Townsends Inlet. **Avalon Shoal**, covered 27 feet and marked by a lighted bell buoy is 7 miles east-southeast of Townsends Inlet.

(64) **Townsends Inlet**, 20 miles southwest of Absecon Inlet, is subject to considerable changes in position and depth, and is used principally by pleasure craft. Channel buoys are not charted, because they are shifted frequently to mark the best water. The depth over the bar is about 4 feet. Numerous wrecks and obstructions are in the approaches to the inlet from seaward.

(65) **Townsends Inlet** is a small resort on the northeast side of the inlet. A seasonal Coast Guard station is on the northeast side of the resort.

(66) The highway bridge over Townsends Inlet has a bascule span with a clearance of 23 feet. (See **117.220**, chapter 2, for drawbridge regulations and opening signals.) The route of the New Jersey Intracoastal Waterway is just west of the bridge. In 1987, it is reported that a sandbar in a north-south direction across the east approach to the channel at the center of the drawspan causes hazardous conditions for mariners, especially during south winds and flood tidal currents that create a loss of steering and dangerous clockwise currents at the base of the bridge; extreme caution is advised in this area.

(67) **Hereford Inlet**, 28 miles southwest of Absecon Inlet, is subject to rapid change. Breakers form at all times on the shoals and in moderate weather on the bar. The approach to the inlet is extremely dangerous with a following sea. The depth over the bar is about 4 feet, but passage should not be attempted without local knowledge. A lighted whistle buoy marks the approach to the inlet.

(68) **Hereford Inlet Light** (39°00'24"N., 74°47'28"W.), 57 feet above the water, is shown from a white square tower with cupola on a white dwelling on the south side of the inlet.

(69) **Nummy Island** is on the inner side of Hereford Inlet; the Intracoastal Waterway passes west of the island. Ocean Drive highway crosses Nummy Island and has drawbridges over **Great Channel**, which leads northward from the inlet, and **Grassy Sound Channel**, which leads westward; both bascule spans have a clearance of 15 feet. (See **117.1 through 117.59, 117.721 and 117.733**, chapter 2, for drawbridge regulations.)

(70) Supplies and facilities at Stone Harbor and Wildwood are described with the New Jersey Intracoastal Waterway, chapter 5.

Charts 12317, 12316, 12214

(71) **Cape May Inlet** (38°56.2'N., 74°51.8'W.), 34 miles southwest of Absecon Inlet, is protected by jetties whose lights are inshore of the submerged ends. A **327°** lighted range marks the channel between the jetties. Buoys mark the channel inside the harbor. At night the lights on the towers on the east side, and from the U.S. Coast Guard rescue tower on the west of the inlet are visible from well offshore.

(72) The danger area of a Coast Guard rifle range extends from **Sewell Point** westward from Cape May Inlet. (See **334.100**, chapter 2, for limits and regulations.)

Pilotage, Cape May Harbor

(73) Pilotage is compulsory for all foreign vessels of 100 gross tons or more and all U.S. vessels under register engaged in foreign trade or commerce of 100 gross tons or more. Pilotage is optional for all U.S. Government vessels and for all U.S. vessels under enrollment in a coastwise trade if they have on board a pilot licensed by the Federal Government to operate in these waters. Pilotage service is available from the Pilots' Association for Bay and River Delaware on a limited 24-hour basis. Arrangements for pilotage can be made through ships' agents or directly. A 24-hour advance notice is requested with updated 6-hour ETA. Pilots will board just southwestward of Lighted Bell Buoy 2CM off Cape May Inlet. (See Pilotage, Bay and River Delaware, Chapter 6.)

(74) **Cape May Harbor** is used by fishing fleets, pleasure craft, and the Coast Guard. The fishing vessels operate from wharves below and above the bridge at the northeast end of the harbor and from wharves in **Schellenger Creek**, at the west end of the harbor. Pleasure-craft facilities are on the north and west sides of the harbor. **Cape May Coast Guard Training Center** and its attendant facilities are on the south side of the harbor.

(75) The resort town of **Cape May** fronts the ocean 2 miles west of Cape May Inlet. Depths between 11 and 30 feet can be carried through the inlet to the end of the inner jetties. From the inner jetties a channel marked by lights and daybeacons leads W through Cape May Harbor then divides N to the mouth of Cape May Canal and S to the mouth of Schellenger Creek. A side channel leads through Schellenger Creek and Spicer Creek Canal to a connection with the Cape May Canal. Traffic through Schellenger Creek is restricted by the 38-foot-wide fixed span highway bridge with a clearance of 4 feet that remains in the closed position. (See **117.1 through 117.59 and 117.750**, chapter 2, for drawbridge regulations.)

Currents

(76) The current velocity is about 2 knots in Cape May Inlet.

Quarantine, customs, immigration, and agricultural quarantine

(77) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(78) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

Small-craft facilities

(79) Most of the fishing and small-craft facilities are along the northern and western sides of Cape May Harbor, and in Schellenger Creek. (See the small-craft

facilities tabulation on chart 12316 for services and supplies available.)

(80) The Coast Guard piers on the inner side of Sewell Point are the largest in the harbor and have depths of 15 feet to 10 feet alongside.

(81) The waterway to **Jarvis Sound**, at the northeast end of Cape May Harbor, and through Cape May Canal at the west end, is described with the New Jersey Intracoastal Waterway, chapter 5.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12326	East Rockaway Inlet, Long Island	40°36'N/73°45'W	4.6	4.3	0.2
12326	Governors Island, New York Harbor	40°42'N/74°01'W	4.9	4.6	0.2
12326	Sandy Hook (Ft. Hancock), Raritan Bay	40°28'N/74°01'W	5.2	4.9	0.2
12323	Manasquan Inlet, USCG Station	40°06'N/74°02'W	4.5	4.2	0.2
12323	Beaverdam Creek Entrance, Barnegat Bay	40°04'N/74°04'W	0.6	0.4	0.1
12323	Coates Point, Barnegat Bay	39°57'N/74°07'W	0.6	0.4	0.1
12323	Seaside Heights	39°57'N/74°04'W	4.9	4.5	0.2
12323	Island Beach, Sedge Islands	39°47'N/74°06'W	0.5	0.4	0.1
12323	Barnegat Inlet (inside), USCG Station	39°46'N/74°07'W	2.5	2.3	0.1
12318	Shooting Thorofare, Little Egg Inlet	39°31'N/74°20'W	3.9	3.5	0.1
12318	Atlantic City	39°21'N/74°25'W	4.6	4.2	0.2
12318	Beesleys Pt., Great Egg Harbor	39°17'N/74°38'W	4.1	3.7	0.2
12318	Townsends Inlet	39°07'N/74°43'W	4.4	4.0	0.2
12318	Nummy Island, Grassy Sound Channel	39°02'N/74°48'W	4.7	4.2	0.2
12317	Cape May Harbor	38°57'N/74°53'W	4.9	4.6	0.2
12304	Woodland Beach, Delaware Bay	39º20'N/75º28'W	6.4	6.1	0.2
12304	Cape May Point, Delaware Bay	38º57'N/74º58'W	5.4	5.0	0.2
12304	Murderkill River entrance, Delaware Bay	39º04'N/75º24'W	5.7	5.3	0.1
12304	Breakwater Harbor	38º47'N/75º07'W	4.7	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 November 2011

General Index of Chart Coverage in Chapter 5
(see catalog for complete coverage)
75°
74°30'
74°
73°30'
40° 30'
40°
39° 30'
39°
NEW YORK
New York City
Staten Island
Sandy Hook
12325
NAVESINK RIVER
SHREWSBURY RIVER
12324
Trenton
12326
MANASQUAN INLET
Toms River
NEW JERSEY
BARNEGAT BAY
BARNEGAT INLET
MULLICA RIVER
LITTLE EGG INLET
12323
Atlantic City
ABSECON INLET
GREAT EGG HARBOR INLET
Ocean City
NORTH
ATLANTIC OCEAN
12316
HEREFORD INLET
12318
CAPE MAY INLET
Cape May
12317

Intracoastal Waterway

(1) The **Intracoastal Waterway** is a toll-free passage which roughly parallels the Atlantic Coast and extends 118 statute miles through bays, lagoons, thorofares, and land cuts from Manasquan Inlet to Delaware Bay at a point 2 miles north of Cape May Light.

(2) In addition to the Intracoastal Waterway and the waters through which it passes, this chapter also describes the several rivers and tributaries that empty into these waters, as well as some of the more important towns and landings along these waterways.

(3) The Intracoastal Waterway is used mainly by pleasure craft, and commercial and sport fishing vessels. The U. S. Army Corps of Engineers, Philadelphia Engineer District, has supervision of the waterway's construction, maintenance, and operation. (See Appendix A for address.)

Mileage

(4) The Intracoastal Waterway mileage is zeroed in 40°06'03"N., 74°01'55"W., off the outer ends of the Manasquan Inlet jetties, which are 40 nautical miles by outside run from The Battery, N.Y.

(5) **Distances along the Intracoastal Waterway are in statute miles to facilitate reference to the small-craft charts 12324, 12316; all other distances are nautical miles. Mileage conversion tables are in Appendix B.**

Channels

(6) The channel of the Intracoastal Waterway is generally 100 feet wide and has dredged depths of 6 feet from Manasquan Inlet to Cape May Harbor, thence 12 feet through Cape May Canal to Delaware Bay.

(7) Effort is made to maintain a 6-foot controlling depth for the waterway, but due to continuous shoaling, 3 feet or less may be found in places, particularly inside the ocean inlets. (See Local Notice to Mariners and latest editions of charts for controlling depths.)

Bridges and cables

(8) Minimum clearances of bridges and cables crossing the Intracoastal Waterway are as follows:

(9) **From Manasquan Inlet to Absecon Inlet**: clearance of overhead cables, 72 feet, **Mile 3.0;** horizontal clearance, 47 feet at bascule bridge, **Mile 3.0;** vertical clearance, 60 feet at fixed bridge, **Mile 14.1** and **Mile 37.4.** A vertical-lift bridge at **Mile 3.9** has clearances of 30 feet down and 65 feet up.

(10) **From Absecon Inlet to Delaware Bay:** vertical clearance, 35 feet at fixed bridges, **Miles 68.9, 84.3, 93.6, and 97.4;** clearance of overhead cables, 55 feet, **Mile 84.3;** horizontal clearance, 49 feet at bascule bridge, **Mile 78.0.**

(11) 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.

Aids to navigation

(12) The U.S. Coast Guard maintains the standard aids that mark the inlets and the special aids that mark the Intracoastal Waterway. The special 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.)

(13) The Department of Environmental Protection, State of New Jersey, maintains the aids to navigation on the rivers and creeks that empty into the New Jersey Intracoastal Waterway.

(14) 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 riprap mounds around them to protect the structures.

(15) The buoys marking the waterways are frequently shifted with changing channel conditions.

Tides

(16) In the inland waters, the tides are greatly affected by the winds both in time and height, westerly winds producing low water and easterly winds high water. In Barnegat Bay, northerly and southerly winds drive the water to the ends of the bay. While the normal range of tide is only about 0.5 foot in sections of the waterway removed from the inlets, strong winds of long duration may cause variations in level of as much as 3 feet below mean low water or 3 feet above mean high water. Near the inlets, the wind has less effect and the normal range of tide is 3 to 4 feet.

Currents

(17) Current velocities may reach 3 knots in the inlets and in the narrow channels that connect the inlets with the inside waters.

Ice

(18) The inside waters are completely closed to navigation by ice during extreme winters. In ordinary winters, some of the channels, especially near the inlets where the currents are strong, remain open most of the time, though ice always forms on the flats. The inlets themselves are rarely closed, but passage is often difficult because of running ice. All the principal inlets and adjacent channels are used in winter by local fishing boats, but through navigation is usually blocked.

Weather

(19) While the waterway is more protected than the open waters weather is critical since navigation is more confined. Winds diminish over land due to surface friction. However, winds and currents may be intensified in restricted channels and inlets. November through April is the windiest time of the year. Gales are encountered about 1 to 2 percent of the time while speeds greater than 16 knots occur about 10 to 17 percent of the time. Fog is also a problem particularly in restricted waterways. Visibilities drop below 0.5 mile (0.8 km) on about 2 to 5 days per month; they are best from mid to late summer. During the fall and early winter radiation fog often reduces morning visibilities but usually burns off by afternoon. At times in spring, advection fog from the open water may be carried ashore by winds with an easterly component. Smoke and precipitation also add to the problem in all seasons.

(20) Seas can be a problem at ocean entrances such as Manasquan Inlet, Barnegat Inlet, and Little Egg Inlet. This is true with strong winds between northeast and south, particularly on an ebb tide.

Facilities

(21) At communities along or adjacent to the waterway are numerous piers, wharves, and docks, many of which are open to general public use. Fuel, water, and other supplies are readily available. Public and privately owned boat basins are located in many streams entering the bays and thorofares through which the waterway passes. Boat-repair and storage yards with marine railways are also scattered along the waterway. Facilities for icing, storing, and shipping seafood are available at most of the larger communities. (See the small-craft facilities tabulation on charts 12324 and 12316 for services and supplies available.)

No-Discharge Zone

(22) The State of New Jersey, with the approval of the Environmental Protection Agency, has established a No-Discharge Zone (NDZ) in Barnegat Bay Complex and its navigable tributaries. The boundary lines have been defined for the Point Pleasant Canal, Barnegat Inlet and Egg Harbor Inlet as lines between the following points: Point Pleasant Canal 40°04.0'N., 74°03.3'W. to 40°04.1'N., 74°03.3'W.; and Barnegat Inlet – a line between the North and South Buoys; and Little Egg Inlet 39°30.5'N., 74°18.3'W. to 39°30.5'N., 74°17.3'W. (see chart 12324 for limits).

(23) Within the NDZ, discharge of sewage, whether treated or untreated, from all vessels is prohibited. Outside the NDZ, discharge of sewage is regulated by **40 CFR 140** (see chapter 2).

COLREGS Demarcation Lines

(24) The lines established for New York Harbor, the inlets of the New Jersey coast and Delaware Bay are described in **80.165, 80.170, 80.501 and 80.503**, chapter 2.

Charts 12316, 12324

(25) **Manasquan Inlet**, 22 miles southward of Sandy Hook Light, is the northern terminus of the New Jersey Intracoastal Waterway, and the Atlantic entrance to shallow **Manasquan River,** which flows into the inlet from the westward. The inlet is used by many commercial fishing craft and pleasure craft. Mariners should exercise caution when entering Manasquan Inlet when the wind and tide are opposed; local knowledge is advised. **Manasquan Inlet Coast Guard Station** is on the south side of the inlet.

(26) Traffic conditions in Manasquan Inlet can be hazardous due to the large volume of commercial and pleasure boat traffic. Mariners are advised to exercise caution and control speed and wake while transiting the inlet. The Coast Guard monitors traffic in the inlet and safe boating is enforced.

Pilotage, Manasquan Inlet

(27) Pilotage is compulsory for foreign vessels and U.S. vessels under register. Pilotage is available from the Sandy Hook Pilot Association, 201 Edgewater Street, Staten Island, NY 10305, telephone 718-448-3900, FAX 718-876-8055, e-mail: pilotoffice@sandyhookpilots.com. Arrangements for pilotage may be made through ship's agents or directly. A 24-hour advance notice is required.

(28) A marked dredged channel, protected at the inlet entrance by two jetties, leads through Manasquan Inlet to the first bridge. In 2006, the controlling depth was 12.6 feet (10.5 feet at midchannel) in the inlet through the jetties, thence in 2003, 3.2 feet (6.7 feet at midchannel) to the first bridge.

(29) The north jetty is marked by a light on its outer end. The south jetty is marked by a light near the outer end; a sound signal is at the south jetty light. Give the jetties a good berth to avoid any loose rocks.

Currents

(30) The current velocity in Manasquan Inlet is about 1.8 knots in the inlet.

(31) The resort towns of **Manasquan** and **Point Pleasant Beach** are on the north and south sides of Manasquan

Inlet, respectively, while the towns of **Brielle (Mile 1.3), Point Pleasant (Mile 2.6),** and **Riviera Beach** (3.5 miles above the inlet jetties) are on Manasquan River.

(32) **Cooks Creek**, **Mile 0.4**, is an outlet for **Lake Louise** on the south side of Manasquan River. The fixed highway bridge over the creek has a 28-foot channel span with a clearance of 10 feet. Depths are about 8.5 feet below the bridge decreasing to 2 feet above it.

(33) **Crabtown Creek**, **Mile 0.9**, enters Manasquan River on the north side. The staked channel has a controlling depth of about 5 feet for 0.7 mile into the northwest fork. The highway bridge over the creek has a 31-foot bascule span with a clearance of 9 feet. (See **117.1 through 117.49 and 117.719,** chapter 2, for drawbridge regulations.)

(34) The railroad bridge at **Mile 1.0** has a 48-foot bascule span over Manasquan River with a clearance of 3 feet. The bridgetender monitors VHF-FM channel 13 (156.65 MHz); call sign, KT-4203. The State Route 35 highway bridge at **Mile 1.3** has a bascule span with a clearance of 30 feet. (See **117.1 through 117.59 and 117.733,** chapter 2, for drawbridge regulations.) The overhead power cable on the west side has a clearance of 107 feet. The current velocity is about 2.2 knots at the highway bridge.

(35) The State Route 70 highway bridge over Manasquan River at Riviera Beach has a fixed span with a clearance of 25 feet.

Small-craft facilities

(36) Small-craft facilities are along Cooks Creek, Crabtown Creek, and tributaries, and up Manasquan River near the two bridges a mile inside Manasquan Inlet, and near Point Pleasant and Riviera Beach. Commercial fishing wharves, a 300-ton railway, and other small-craft facilities are along **Wills Hole Thoroughfare,** westward of Cooks Creek. In 2004, depths of 1.1 to 7.0 feet were available. Mariners should favor the south side of the waterway for deepest water. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

(37) From Manasquan Inlet, the New Jersey Intracoastal Waterway follows the dredged channel in Manasquan River to **Mile 2.7** where it turns south into the **Point Pleasant Canal.** The 1.9-mile narrow land cut has bulkheaded sides; vessels are required to pass through at a safe speed to avoid damage to structures and boats.

(38) Local sources, including both bridge tenders and the Marine Police, verified present data which indicate that the tides are greatly affected by winds, therefore, diminishing any regularity in the tidal cycle.

Mariners should consider the following precautionary measures before transiting the canal:

(39) 1. The time differential of the tidal cycle between the Mansaquan reference station, located at the railroad bridge crossing the Manasquan River, and Point Pleasant Canal is reported to be about 3 hours.

(40) 2. The safest time to transit the canal is at slack high water.

(41) 3. Existing wind conditions, in relation to tides, are extremely important factors to be considered when picking the time to transit.

(42) 4. Navigators should be especially cautious of two-way traffic and of following too close, particularly at the bridges.

(43) At **Mile 3.0,** State Route 88 highway bridge crosses the canal to the town of **Point Pleasant,** on the east side of the canal; the bridge has a vertical lift span with clearances of 31 feet down and 66 feet up. Overhead power and TV cables on the south side of the bridge have a least clearance of 72 feet.

(44) At **Mile 3.9,** a vertical-lift highway bridge with a clearance of 30 feet down and 65 feet up crosses the canal. A small marina on the east side of the canal, at **Mile 4.1**, has some marine supplies and two travel lifts to 30 tons are available for hull and engine repairs.

(45) At **Mile 4.6,** the waterway route leaves the canal and passes through **Barnegat Bay,** which has a north-south length of about 25 miles. The western half of the bay has depths of 5 to 10 feet; the eastern half is mostly extensive flats.

(46) Supplies, repairs, and berthing facilities are available in **Bay Head Harbor** at the north end of Barnegat Bay; maximum haul-out capacities; railway, 80 feet; lift, 35 tons.

(47) **Beaverdam Creek** enters the west side of Barnegat Bay opposite **Mile 4.8.** The marked channel into the creek has a controlling depth of about 3 feet. The Beaverdam Road highway bridge, 0.4 mile from the mouth, has a bascule span with a 47-foot channel width and a vertical clearance of 14 feet. (See **117.1 through 117.59 and 117.705**, chapter 2, for drawbridge regulations.) The overhead power cable on the east side of the bridge has a clearance of 55 feet. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

(48) **Metedeconk River**, separated from Beaverdam Creek by **Wardells Neck,** flows eastward into Barnegat Bay. The northern approach to the river is the same as for Beaverdam Creek; the southern approach is a marked passage between **Herring Island** and **Metedeconk Neck.** The controlling depth into the river is about 4 feet; depths above the entrances are 5 to 8 feet for about 3 miles.

(49) **Laurelton,** 4 miles up Metedeconk River from the Intracoastal Waterway, has facilities for small craft. Under average conditions, boats drawing as much as 3 feet can maneuver the shallow channel to Laurelton; the mean range of tide is almost negligible, and the wind has much more effect than the tide. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

(50) At **Mile 6.3,** the County Route 528 bascule highway bridge over Barnegat Bay to **Mantoloking** on the barrier beach has a clearance of 30 feet. (See **117.733,** chapter

2, for drawbridge regulations.) There are facilities on the west side of the waterway on both sides of the bridge. Fuel, marine supplies, water, ice, a pump-out station, repairs and berthing with electricity are available; maximum haul-out capacities; railway, 75 feet; lift, 50 tons.

(51) **Caution:** In 1983, numerous stakes were reported on the west side of the waterway in the vicinity of **Mile 7.3,** in about 40°01'55"N., 74°03'50"W.

(52) **Kettle Creek** flows southeastward into Barnegat Bay opposite **Mile 9.6.** The creek has depths of 4 feet to the forks, 1.4 miles above the mouth. Gasoline and some supplies are available.

(53) **Shelter Cove,** on the west side of Barnegat Bay at the entrance to **Goose Creek,** opposite **Mile 12.8,** has some supplies and slips. Repairs can be made; travel lift, 15 tons. The controlling depth into the cove is about 5 feet.

(54) A marked 6-foot channel follows the inner barrier beach from **Lavallette,** east of **Mile 10.7,** to **Seaside Heights,** east of **Mile 14.1**. The 31-foot-wide fixed bridge to **West Point Island**, east of **Mile 12.6**, has a clearance of 10 feet, but with local knowledge, the bridge can be bypassed through the narrow channel west of the island.

(55) There are many facilities along the inner barrier beach from **Mile 9.5** to **Mile 16.0**. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

(56) At **Mile 14.1**, State Route 37 highway bridge over Barnegat Bay has a bascule span with a clearance of 30 feet. (See **117.1 through 117.59 and 117.733,** chapter 2, for drawbridge regulations.) The fixed span of this bridge between **Pelican Island** and Seaside Heights has a clearance 15 feet. A fixed highway bridge with a clearance of 60 feet is adjacent northward of the bascule bridge.

(57) The municipal dock, 0.2 mile south of the bridge on the inner side of Seaside Heights, has depths of about 7 feet at the face.

(58) **Toms River,** which empties into the west side of Barnegat Bay at **Mile 14.6,** has midchannel depths of 3.5 to 5 feet. The channel is well marked. In 1982, shoaling to an unknown extent was reported about 0.25 mile south of Long Point in about 39°56'00"N., 74°08'19"W.

(59) **Island Heights,** on the high wooded point on the north side of Toms River, 1.7 miles above Barnegat Bay, has a public pier with about 5 feet alongside. Gasoline, diesel fuel, marine supplies, ice, water, a pump-out station and berthing with electricity are available at one of several facilities. Repairs can be made; largest haul-out capacities: lifts to 25 tons.

(60) The town of **Toms River,** 4 miles upriver from Barnegat Bay, is the head of navigation; controlling depth to the town is about 5 feet. There are complete fuel, supply, repair, and slip facilities; maximum haul-out capacities; railway, 60 feet; lift, 60 tons.

(61) Gasoline, diesel fuel, ice, water, a pump-out station, launching ramp, some marine supplies and slips are available at a marina on **Goodluck Point** at **Mile 16.2.** Minor engine and hull repairs can be made; largest lift, 25 tons.

(62) In 1973, a piling, 6 inches in diameter and extending 1 foot above the water at low tide, was reported off Goodluck Point in about 39°56.1'N., 74°06.4'W.

(63) **Cedar Creek,** which empties into the west side of Barnegat Bay at **Mile 20.2,** has depths of 3 to 4 feet. There is a light on the south side of the entrance to the creek.

Small-craft facilities

(64) Small-craft facilities along the 1.4-mile navigable length of Cedar Creek have gasoline, diesel fuel, marine supplies, berthing with electricity, ice, water, storage, a pump-out station and hull and engine repairs can be made; lift capacity, 40 tons.

(65) **Forked River,** on the west side of Barnegat Bay opposite **Mile 23.8,** is entered by a marked channel which leads to the head of navigation at the town of **Forked River,** about 1.8 miles above the bay. In 1997, the controlling depth was reported to be 4 feet. The river forks into three branches about halfway up; the town is on the north side of **North Branch.** Forked River is reported to afford excellent hurricane shelter.

(66) There are several marinas and boatyards on both sides of North Branch. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

(67) A State marina is at the head of North Branch. The **harbormaster** at this facility assigns transient berths. The New Jersey Bureau of Coastal Engineering, Aids to Navigation Section, is based at the marina and can provide mariners with the latest information of conditions on the Intracoastal Waterway, and on other waters marked by the State of New Jersey.

(68) **Oyster Creek**, on the west side of Barnegat Bay opposite **Mile 24.7,** has a navigable length of over 1 mile to Highway 9 bridge.

(69) At **Mile 25.9,** Oyster Creek Channel leads eastward to Barnegat Inlet. The channel and the inlet were described in chapter 4.

(70) **Waretown**, west of **Mile 26.3** on the bay shore, has many small-craft facilities along its easterly shore, and in **Waretown Creek,** on the north side of town, and in the small-boat basin, known as **Sanborn Anchorage,** on the south side of town. Controlling depths are about 4 feet in Waretown Creek and about 5 feet in Sanborn Anchorage. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

(71) **Double Creek**, southwest of **Mile 28.0,** is protected on the north side of its entrance by a jetty which has a light on its outer end. The channel is navigable to just above the fixed highway bridge 0.7 mile above Barnegat Bay. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.) In 1981-1987, severe shoaling was reported in the entrance and in the creek.

(72) In 1980, a submerged pile was reported in the channel about 20 feet east of Light 62 at **Mile 35.6**.

(73) At **Mile 37.4,** a fixed highway bridge with a clearance of 60 feet over the intracoastal route through **Manahawkin Bay** connects the westerly shore of the bay with the barrier beach. The bridge also crosses three minor channels, one close to the westerly shore of the bay, one between the two marshy islands on the east side of the bay, and the other between the more easterly island and the barrier beach. Clearances over these minor channels, from north to east, are: 15 feet, 11 feet for a width of 27 feet, and 15 feet, respectively. Overhead cable clearances are: 19 feet between the westerly shore of Manahawkin Bay and the first island on the east side of the bay, 18 feet between the two islands, and 22 feet between the more easterly island and the barrier beach.

Small-craft facilities

(74) There are many small-craft facilities along the bay shore of **Long Beach** between Barnegat Inlet and Beach Haven Inlet. (See also chart 12316.) Most of these are near the bridge at **Mile 37.4,** at **Ship Bottom, Mile 39.0,** and at **Beach Haven, Mile 45.7.** (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

(75) **Westecunk Creek,** 2 miles northwest of **Mile 42.5,** is marked at the entrance by a light. A marked channel leads from Little Egg Harbor to a public landing 2.5 miles above the mouth of the creek. In 1999, the channel had a reported controlling depth of 6 feet. The town of **West Creek** is 0.3 mile west of the landing. Small-craft facilities are on the southwesterly side of the creek. (See the small-craft facilities tabulation on chart 12324 for services and supplies available.)

Chart 12316

(76) **Little Egg Harbor** has general depths of 4 to 6 feet in its northwestern part; in the southern part is a large group of marshy islands surrounded by a shallow area with depths of 1 to 3 feet. Buoys mark a race course in the harbor. Between some of these islands are narrow unmarked channels which begin and end abruptly in the shallow areas. The Intracoastal Waterway continues southward along the inner side of the barrier beach.

(77) **Parker Cove** is on the north side of Little Egg Harbor about 3 miles northwest of **Mile 44.3. Parker Run,** marked by a light on the south side of the entrance, empties into the northwest corner of the cove. Depths of about 4 feet can be carried to a public dock on the north side of Parker Run, 0.3 mile above the entrance. There are numerous small-craft facilities along Parker Run. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(78) **Tuckerton Creek** empties into the west side of Little Egg Harbor about 4 miles northwest of **Mile 49.4.** A dredged approach, marked by lights, extends 1.6 miles southeastward from the mouth of the creek to the north end of **Story Island Channel**. In 1998-1999, the centerline controlling depth was 3 feet to the mouth of the creek; thence in 1977-1999, 1 foot to **Parkers Landing**, 0.9 mile above the entrance; thence 2.5 feet to **Scow Landing**, 1.6 miles above the entrance; and thence .5 foot to the milldam at **Tuckerton**, 1.8 miles above the mouth. Overhead power cables, about 0.6 mile above the mouth, have a least clearance of 50 feet.

Currents

(79) Cross currents may be experienced in the approach channel to Tuckerton Creek. A **speed limit** of 8 miles per hour is prescribed for the channel. (See **162.30,** chapter 2.)

Small-craft facilities

(80) There are numerous small-craft facilities along the creek, and on the north side of the approach channel below the entrance to the creek. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(81) At **Mile 50.2, Marshelder Channel,** with depths of 7 feet or more, makes northward and around the southwest side of **Story Island** for 2.5 miles to Little Egg Harbor and the dredged approach to Tuckerton Creek.

(82) There are several thorofares through the marsh area south and west of Marshelder Channel, but **Little Sheepshead Creek** is the only one of any importance. This 2-mile winding passage from **Mile 50.7** of the Intracoastal Waterway to the eastern side of Great Bay is used extensively. In 1973, shoaling to 1 foot was reported in the creek in about 39°31'20"N., 74°19'16"W. The fixed highway bridge over Little Sheepshead Creek has an 18-foot channel span with a clearance of 14 feet; overhead power cables have a least clearance of 36 feet.

(83) The waterway route skirts the inner ends of the shoals in **Beach Haven Inlet** and **Little Egg Inlet,** both mentioned in chapter 4, and continues westward through **Shooting Thorofare** and along the south side of **Great Bay,** which has general depths of 4 to 7 feet.

(84) **Big Creek**, marked by a light at the entrance, empties into the north side of Great Bay opposite **Mile 55.0.** Depths of about 5 feet can be carried to a large marina 2 miles above the mouth. A highway bridge with a 30-foot fixed span and a clearance of 12 feet crosses the creek 1.2 miles above the mouth. Gasoline, berths, some marine supplies, and a 10-ton lift are available at the marina; hull, engine, and electronic repairs can be made.

(85) **Mullica River,** which empties into the northwestern part of Great Bay, is navigable to a milldam 20 miles above the bay. In 1998, it was reported a depth of about 5 feet can be carried across the Great Bay flats to the mouth of the river. Once inside the river, the water is deep and the midchannel is clear for a long distance.

(86) In 1998, it was reported that depths of 8 to 4 feet can be carried from the mouth of Mullica River to the bridge 16 miles above the entrance, and thence 2.5

feet to within a mile of the milldam. A lighted cutoff, 3 miles above the mouth, has ample depth and reduces distances to points on the upper river by about 2 miles.

(87) The navigation of Mullica River is fairly easy in the lower reaches, but the chart should be followed closely to avoid the unmarked 3-foot shoals in the entrance. The last few miles to the milldam are shallow, difficult, and full of stumps. The river is marked by lights and stake daybeacons as far as the first bridge; stake daybeacons mark the reaches above the bridge.

(88) The fixed highway bridge, 6.5 miles above the mouth of Mullica River, has a clearance of 30 feet; overhead power cables, 500 feet above the bridge, have a clearance of 50 feet. A boatyard, 0.5 mile below the bridge, has a 20-ton lift; hull and engine repairs can be made, and berths, gasoline, diesel fuel and marine supplies are available. The highway bridge 13 miles above the mouth has a 30-foot bascule span with a clearance of 6 feet. An overhead power cable just above the highway bridge has a clearance of 39 feet. The highway bridge, 16 miles above the mouth, has a 30-foot bascule span with a clearance of 5 feet. (See **117.1 through 117.59 and 117.731**, chapter 2, for drawbridge regulations.)

Small-craft facilities

(89) Gasoline, diesel fuel, some supplies, and slips are available at small-craft facilities at **Green Bank** and **Sweetwater,** about 16 and 17 miles above the mouth, respectively. Minor repairs can be made; largest lift, 15 tons.

(90) **Nacote Creek** empties into the southwest side of Mullica River 4 miles above the mouth. Controlling depths are about 5 feet to the U.S. Route 9 highway bridge, 1.6 miles above the mouth of the creek, and thence 3 feet to **Port Republic**, at the head of navigation 3.6 miles from the mouth. The U.S. Route 9 bridge has a 30-foot bascule span with a clearance of 5 feet. In July 2001, a fixed highway bridge was under construction with a design clearance of 25 feet; upon completion, it will replace the bascule bridge. The overhead power cables just upstream of the bridge have a clearance of 60 feet.

(91) State Route 575 drawbridge crosses the creek about 3 miles above the mouth. (See **117.1 through 117.59 and 117.732**, chapter 2, for drawbridge regulations.)

(92) A boatyard is on the north side of the creek just below the U.S. Route 9 bridge. Berths and gasoline are available; lifts to 10 tons can handle hull and motor repairs.

(93) **Bass River**, which empties into the north side of Mullica River 5 miles above the mouth, has depths of about 4 feet to **New Gretna**, 2.4 miles above Mullica River. The U.S. Route 9 fixed highway bridge at New Gretna has a clearance of 18 feet. The overhead power cable just below the bridge has a clearance of 42 feet. The fixed highway bridge just upstream has a clearance of 20 feet.

Small-craft facilities

(94) Two small-craft facilities just below the bascule bridge, on both sides of the river, have berths with electricity, gasoline, diesel fuel, water, ice, a pump-out station, dry storage and marine supplies. A 12-ton lift is available; hull, engine and electronic repairs can be made.

(95) **Wading River**, which empties into the north side of Mullica River 7.5 miles above the mouth, has depths of about 4 feet to State Route 542 highway bridge 4 miles upstream. The bridge has a 30-foot bascule span with a clearance of 5 feet. (See **117.1 through 117.59 and 117.759,** chapter 2, for drawbridge regulations.)

(96) **Mott Creek**, on the west side of Great Bay, is marked by a light and has depths of about 4 feet to a bulkhead landing 1.5 miles above the mouth; gasoline and some supplies are available. The 2-mile thorofare that winds northward through the marshes from the Mott Creek landing to the mouth of Nacote Creek has a controlling depth of about 3 feet.

(97) **Oyster Creek,** on the west side of Great Bay 0.7 mile south of Mott Creek, is marked by a light and has depths of 4 feet in the entrance channel thence 2 feet to the small fishing village of **Oyster Creek,** 0.3 mile from the mouth, and 0.2 mile beyond to a public landing.

(98) The Intracoastal Waterway leaves Great Bay at **Mile 56.8** and follows **Main Marsh Thorofare** to **Little Bay,** and thence along the western side of Little Bay across the mouths of **Hammock Cove,** and **Perch Cove** and westward of **Shad Island.**

(99) At **Mile 60.3**, an alternate route swings eastward in **Brigantine Channel,** which leads to **Brigantine Inlet,** mentioned in chapter 4. About 1.3 miles along the channel, the alternate route turns southward and follows **Obes Thorofare** along the inner side of Brigantine. The overhead power cable that crosses Obes Thorofare, 1.3 miles from Brigantine Channel, has a clearance of 47 feet.

Small-craft facilities

(100) There are many small-craft facilities along the bay side of **Brigantine**. **Baremore Quarters**, a cove on the inner side of Brigantine 2.3 miles along Obes Thorofare from Brigantine Channel, is a good harbor of refuge. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(101) From Baremore Quarters, the alternate route follows **Bonita Tideway** along the city waterfront, then swings westward through **Golden Hammock** Thorofare and rejoins the main route at **Mile 64.2.** The total length of the alternate route is 7 miles. Depths of 5 feet or more are on the alternate route along the inner side of Brigantine, but the channel shoals as it nears the main Intracoastal Waterway route and can be navigated only by shallow drafts.

(102) The main route of the waterway leaves Little Bay at **Mile 60.3** and continues along the northwestern side of **Grassy Bay,** a shoal area mostly bare at low water, to

Meadow Cut. From this short land cut, the route follows the southeastern side of **Reed Bay** to and through **Gull Island Thorofare,** across the mouth of **Broad Creek,** through **Middle Thorofare,** where it is rejoined by the alternate route from Brigantine, and into Absecon Channel at **Mile 64.5**, which leads to Absecon Inlet and the marine facilities in Clam Creek at **Atlantic City.** (See chapter 4.)

(103) **Absecon Channel**, the marked approach to Absecon Creek through Absecon Bay, can be entered at **Mile 64.5** or through **Point Bar Thorofare** at **Mile 65.6. Absecon Bay** is shallow and bares in some places at low water.

(104) **Absecon Creek**, which flows into the northwest side of the bay, is crossed by three fixed bridges, about 1.5 miles above the mouth, at **Absecon;** least clearance is 3 feet. A marked channel with reported depths of about 5 feet leads across Absecon Bay to the mouth of the creek. In 1999, the reported midchannel controlling depth in the creek was 5 feet from the mouth to the bridges; the creek is reported navigable by small outboards for about 2 miles above the bridges.

Small-craft facilities

(105) A small-craft facility is on the north side of the creek, about 0.5 mile below the bridges. A 7-ton lift and a 30-foot marine railway are available; engine, hull, electronic repairs can be made. Gasoline, dry storage, water, ice and marine supplies are also available.

(106) From Absecon Channel, the Intracoastal Waterway follows **Beach Thorofare** along the northwest side of Atlantic City. U.S. Route 30 highway bridge, over the thorofare at **Mile 67.2**, has a bascule span with a clearance of 20 feet.

(107) The SRNJ railroad bridge over Beach Thorofare at **Mile 68.9** has a swing span with a clearance of 5 feet. (See **117.1 through 117.59 and 117.733,** chapter 2, for drawbridge regulations.) A fixed highway bridge, 200 feet south of the railroad bridge, has a clearance of 35 feet.

(108) The route of the Intracoastal Waterway leaves Beach Thorofare at **Mile 69.5** and continues along the inner side of Atlantic City by way of **Inside Thorofare.** Albany Avenue (U.S. Routes 40-322) Bridge, which crosses Inside Thorofare at **Mile 70.0,** has a bascule span with a clearance of 10 feet. (See **117.1 through 117.59 and 117.733,** chapter 2, for drawbridge regulations.)

(109) The Dorset Avenue highway bridge over the waterway at **Mile 71.2** connects **Ventnor Heights,** on the northwest side, with **Ventnor City,** on the beach; the bridge has a bascule span with a clearance of 9 feet. (See **117.1 through 117.59 and 117.733,** chapter 2, for drawbridge regulations.)

(110) The waterway turns sharply northwestward at **Mile 71.4** and follows **West Canal** along the southwest side of Ventnor Heights to **Mile 72.3,** where it rejoins Beach Thorofare and continues southwestward.

Small-craft facilities

(111) A small-craft facility southwest of the turn has water, ice, wet and dry storage, marine supplies, launching ramp, hull, engine and electronic repairs available.

(112) From **Mile 73.3** southwest of **Shelter Island,** a marked channel with a controlling depth of about 3 feet leads northward along the eastern shores of **Shelter Island Bay** and **Lakes Bay** to **West Atlantic City,** 2.2 miles from the waterway. The channel continues along the north shore of Lakes Bay to a yacht club at **Pleasantville,** 3.4 miles from the waterway.

(113) The highway bridge over Beach Thorofare at **Mile 74.0** has a bascule span with a clearance of 14 feet. **Margate City** is on the beach south of the bridge. Several small-craft facilities are at Margate City. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(114) At **Mile 75.4, Risley Channel** and **Dock Thorofare** leads northward for 2.2 miles to a marine basin near **Northfield.**

Small-craft facilities

(115) Small-craft facilities, on the northwesterly side of Dock Thorofare, can provide gasoline, diesel fuel, water, ice, and marine supplies. Hull and engine repairs can be made; largest lift, 50 tons.

(116) At **Mile 75.4** there is a choice of two routes to the inner side of Ocean City. The exposed route west of the **Longport** waterfront and across **Great Egg Harbor Inlet** has deeper water, but is restricted by the 25-foot clearance of the fixed highway bridge, 0.2 mile south-southwestward of **Mile 75.4.** Care is necessary when passing through the bridge to avoid the shoal making out into the channel from the west side. Currents are strong at the inlet crossing, and the route is exposed to heavy easterly seas. The highway bridge over the inlet, 1.5 miles eastward of **Mile 80.0** has a fixed span with an authorized clearance of 65 feet. A portion of the old bridge has been retained as a fishing pier, extending north 490 feet into the inlet, adjacent to the existing bridge.

(117) The protected route is through Risley Channel and **Broad Thorofare,** but the channel is subject to continuous shoaling. State Route 152 fixed highway bridge over Broad Thorofare at **Mile 78.0** has a vertical clearance of 56 feet.

(118) **Ship Channel** extends northwestward from **Mile 79.1** to Great Egg Harbor Bay. **Bass Harbor,** a narrow channel leading northward from Ship Channel 1.7 miles from the inlet bridge, has depths of about 10 feet in the entrance; State Route 152 fixed highway bridge, 0.3 mile north of the entrance, has a 14-foot span with an authorized vertical clearance of 6 feet.

(119) **Somers Point**, on the north side of Ship Channel 2 miles from the inlet bridge, is a summer resort with wharves that have depths of 2 to 5 feet at their outer ends.

(120) There are many marinas and boatyards in Bass Harbor and along Somers Point. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(121) At **Mile 80.4**, a 2-mile combination of highway bridges and causeways extends southeastward over the Intracoastal Waterway, channels and islands in **Great Egg Harbor Bay** from Somers Point to Ocean City. In 2011, the bridges were under construction. (See **117.1 through 117.59, 117.733, and 117.753,** chapter 2, for drawbridge regulations for the bridges over Ship Channel and the Intracoastal Waterway, respectively.)

Small-craft facilities

(122) A marina, south of the bridge, has gasoline, diesel fuel, berths, launching ramp, dry storage, water and ice available.

(123) The fixed highway bridges that cross Great Egg Harbor Bay, 2 miles westward of the bridge crossing the waterway at **Mile 80.4,** have central-span clearances of 50 feet. An older highway bridge, 0.2 mile to the westward, has a bascule span with a clearance of 14 feet. About 0.5 mile above the old bridge, an overhead power cable, with a clearance of 76 feet over the channel and 50 feet outside the channel, crosses near the head of the bay.

(124) **Patcong Creek**, marked on the westerly side of the entrance by a light, empties into the north side of Great Egg Harbor Bay, 2.6 miles northwestward of the bridge at **Mile 80.4.** The depth over the bar at the entrance is about 3 feet. A fixed highway bridge, 0.5 mile above the mouth of the creek, has a clearance of 15 feet.

(125) The fixed highway bridge, 2.8 miles above the entrance to Patcong Creek, has a channel span with a clearance of 8 feet. Another fixed highway bridge, 3.5 miles above the entrance, has a clearance of 7 feet; about 100 yards below this bridge, the decomposed piles of a former dam extend westward of midstream and are extremely dangerous. Gasoline, some supplies, and slips are available near the first bridge. Repairs can be made; lift, 10 tons.

(126) **Tuckahoe River**, marked at the entrance by a light, empties into the south side of Great Egg Harbor 2.7 miles westward of the bridge at **Mile 80.4.** Controlling depths are about 2 feet across the flats at the entrance, thence 3 feet for 7 miles to the town of **Tuckahoe.** The overhead power cable, 1 mile below Tuckahoe, has a clearance of 41 feet. The State Route 50 highway bridge at the town has a 30-foot bascule span with a clearance of 9 feet. (See **117.1 through 117.59 and 117.757,** chapter 2, for drawbridge regulations.)

(127) A boatyard is just below the bridge. Gasoline and some marine supplies can be obtained. Complete repairs can be made; a 120-foot marine railway and a 60-ton mobile hoist are available.

(128) **Cedar Swamp Creek** empties into the south side of Tuckahoe River 4.3 miles above the river mouth. The creek has depths of about 4 feet to a highway culvert 2.5 miles from the river where a marine railway can haul out boats up to 25 feet for repairs.

(129) **Great Egg Harbor River** is a northwestward continuation of Great Egg Harbor Bay. The controlling depth is about 4 feet from Great Egg Harbor Bay to Mays Landing, at the head of navigation. The overhead power cables between the bay and Mays Landing have clearances of 65 feet or more.

(130) **Middle River** empties into the southwest side of Great Egg Harbor River 0.5 mile above the bay. Depths of 4 feet can be carried up Middle River for 2 miles.

(131) **Powell Creek** empties into the east side of Great Egg Harbor River 5 miles above the bay.

(132) **Mays Landing**, at the head of navigation on Great Egg Harbor River, is 12 miles from Great Egg Harbor Bay. The river water is nearly fresh at the town. The town bulkhead has depths of about 5 feet alongside. A marina here can provide gasoline, berths, water, ice, and some marine supplies. Minor hull and engine repairs can be made; marine railway, 50 feet; lift, 3 tons.

(133) The Intracoastal Waterway continues southerly along the inner side of **Ocean City;** lagoons here accommodate craft drawing up to 5 feet. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(134) The waterway follows **Beach Thorofare** to **Peck Bay;** the mudflats bordering the channel through the bay are visible in some places at low water. The highway bridge at **Mile 84.3** has a fixed channel span with a clearance of 35 feet. Overhead power and TV cables, close southward of the bridge, have a clearance of 35 feet. Just north of the bridge on the west side of the waterway, is a year round, full service marina with a 4-foot approach reported in 2002. Berths with electricity, water, ice, a pump-out station, diesel fuel, gasoline, marine supplies, hull, engine and electronic repairs are available; lift capacity, 35 tons.

(135) From Peck Bay, the route follows **Crook Horn Creek.** The railroad bridge over the creek at **Mile 86.6** has a swing span with a clearance of 2 feet. In 1992, the bridge was being removed.

(136) The waterway enters **Middle Thorofare** at **Mile 88.0,** thence continues through **Ben Hands Thorofare** to **Mile 89.8** in **Main Channel,** which leads eastward and northward for 1.5 miles to the inner side of **Strathmere,** just south of Corson Inlet. The highway bridge over the waterfront channel at Strathmere has a bascule span with a clearance of 15 feet. (See **117.1 through 117.59 and 117.714**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channel 13; call sign WQZ-342.

Small-craft facilities

(137) There are several small-craft facilities at Strathmere; gasoline, berths, water, ice, and some marine supplies can be obtained. Engine repairs can be made; marine railway, 14 feet.

(138) The waterway follows Main Channel southwestward, passing into shallow **Ludlam Bay** at **Mile 91.3** and enters **Ludlam Thorofare** at **Mile 92.5.** The fixed highway bridge at **Mile 93.6** has a clearance of 35 feet, and the overhead power cables crossing at **Mile 93.8** have a least clearance of 56 feet.

(139) **Sea Isle City**, on the barrier beach at the southeast end of the bridge at **Mile 93.6,** has several basins with depths of 3 to 6.5 feet in the entrances and slightly more inside. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(140) The Intracoastal Waterway enters **Townsend Channel** at **Mile 95.3** and follows the inner side of the resort known as **Townsends Inlet.**

Small-craft facilities

(141) Gasoline, diesel fuel, water, ice, berths, and marine supplies are available at the small-craft facilities at Townsends Inlet. Engine repairs can be made; marine railway, 35 feet.

(142) At **Mile 96.4,** the waterway is 300 yards west of the highway bridge over **Townsends Inlet,** described in chapter 4. **Avalon,** on the southwest side of the inlet, is separated from the waterway's **Ingram Thorofare** by a wide marsh area.

(143) **Cornell Harbor**, a channel with a reported depth of 4.0 feet in the north half in 2000, leads southeastward through the marsh from **Mile 96.8** to Avalon thence along the inner side of the resort.

(144) **Pennsylvania Harbor**, 0.5-mile southwestward of Cornell Harbor, had a reported controlling depth of 2.7 feet (4.5 feet at midchannel) in 2000. **Princeton Harbor**, 0.2-mile southwestward of Pennsylvania Harbor had a reported controlling depth of 2.3 feet (deeper water is available with local knowledge) in 1999-2000. Both waterways lead to the Avalon waterfront. The fixed bridges over the Avalon channel at the inner ends of the two harbors restrict passage between them or to the southwest to an overhead clearance of 4 feet.

(145) Gasoline, diesel fuel, water, ice, berths, some marine supplies, and a 4-ton forklift are available at Avalon; hull and engine repairs can be done.

(146) A fixed highway bridge with a clearance of 35 feet crosses Ingram Thorofare at **Mile 98.1.**

(147) The waterway follows Ingram Thorofare westward to **Paddy Thorofare,** thence into shallow **Great Sound** at **Mile 98.9.** At **Mile 100.0,** the route leaves Great Sound and follows **Gull Island Thorofare** southward to the Stone Harbor waterfront.

(148) **Stone Harbor** is a resort on the northeast side of Hereford Inlet. The highway bridge over the waterway at **Mile 102.0** has a bascule span with a 10-foot clearance. (See **117.1 through 117.59 and 117.733,** chapter 2, for drawbridge regulations.)

(149) Several basins are along the Stone Harbor waterfront. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(150) The waterway follows **Great Channel** southwestward along the Stone Harbor waterfront, then turns sharply westward at **Mile 103.3** and follows the northwestern shore of **Nummy Island.** The bridge over the channel that leads along the east side of Nummy Island to Hereford Inlet was described in chapter 4.

(151) At **Mile 104.6,** the waterway route through **Grassy Sound Channel** is joined by the main channel from Hereford Inlet. The bascule bridge over the inlet channel was described in chapter 4.

(152) **Beach Creek,** on the inner side of North Wildwood just south of Hereford Inlet, has depths of about 2 feet in the entrance, but deeper water inside. The fixed bridge, 0.4 mile above the entrance, has a 40-foot span with a vertical clearance of 14 feet.

(153) The highway bridge over the waterway at **Mile 105.2** has a fixed span with a clearance of 55 feet. The route enters **Grassy Sound** at **Mile 106.1** and follows a well-marked channel. An overhead power cable near the bridge has a 100-foot clearance.

(154) East of the bridge at **Mile 107.5,** a 5-foot channel leads along the northeast side of West Wildwood for 0.8 mile to the inner waterfront of **Wildwood.** Passage is limited by the 5-foot clearances of the fixed bridges that connect the two communities.

(155) At **Mile 108.7, Post Creek** extends eastward from the waterway and widens into a small bay between Wildwood and West Wildwood. **Ottens Harbor,** a dredged slip with depths of about 10 feet, extends 0.5 mile southeastward from the mouth of Post Creek. Commercial wharves along the waterway can accommodate vessels up to 150 feet.

(156) The highway bridge over the waterway at **Mile 108.9** has a bascule span with a 25-foot clearance.

(157) **Sunset Lake**, a comparatively deep basin on the inner side of **Wildwood Crest,** can be entered from either **Mile 109.3** or **Mile 110.2** of the Intracoastal route. The controlling depth is about 7 feet in the entrances.

Small-craft facilities

(158) Many small-craft facilities are along the Wildwood waterfront. (See the small-craft facilities tabulation on chart 12316 for services and supplies available.)

(159) The waterway continues southward through **Jarvis Sound** and **Middle Thorofare.** The highway bridge over Middle Thorofare at **Mile 112.2** has a bascule span with a clearance of 23 feet. The bridgetender monitors VHF-FM channel 13; call sign WQZ-342. Just north of the bridge, **Lower Thorofare** leads eastward from the waterway for 0.3 mile, then turns northward. There is a long marginal fish wharf on the east side of Lower Thorofare; fuel and supplies are available.

(160) The waterway route crosses the inner end of **Cape May Inlet** at **Mile 112.6** and continues westward through Cape May Harbor; the inlet and harbor were described in chapter 4.

(161) **Cape May Canal** is entered at **Mile 114.1.** Vessels transiting the canal should limit their speed to 5 knots

Cape May Canal (west approach), New Jersey
Image courtesy of Air Station Atlantic City (2002)

and should proceed with special care in the vicinity of the bridges. A federal project provides for a depth of 12 feet through the canal to Delaware Bay. (See Notice to Mariners and latest editions of charts for controlling depths.)

Currents

(162) In Cape May Canal, the current velocity is 1.9 knots at the east end and 0.9 knot at the west end; passage of barge tows may be delayed because of tide and current conditions.

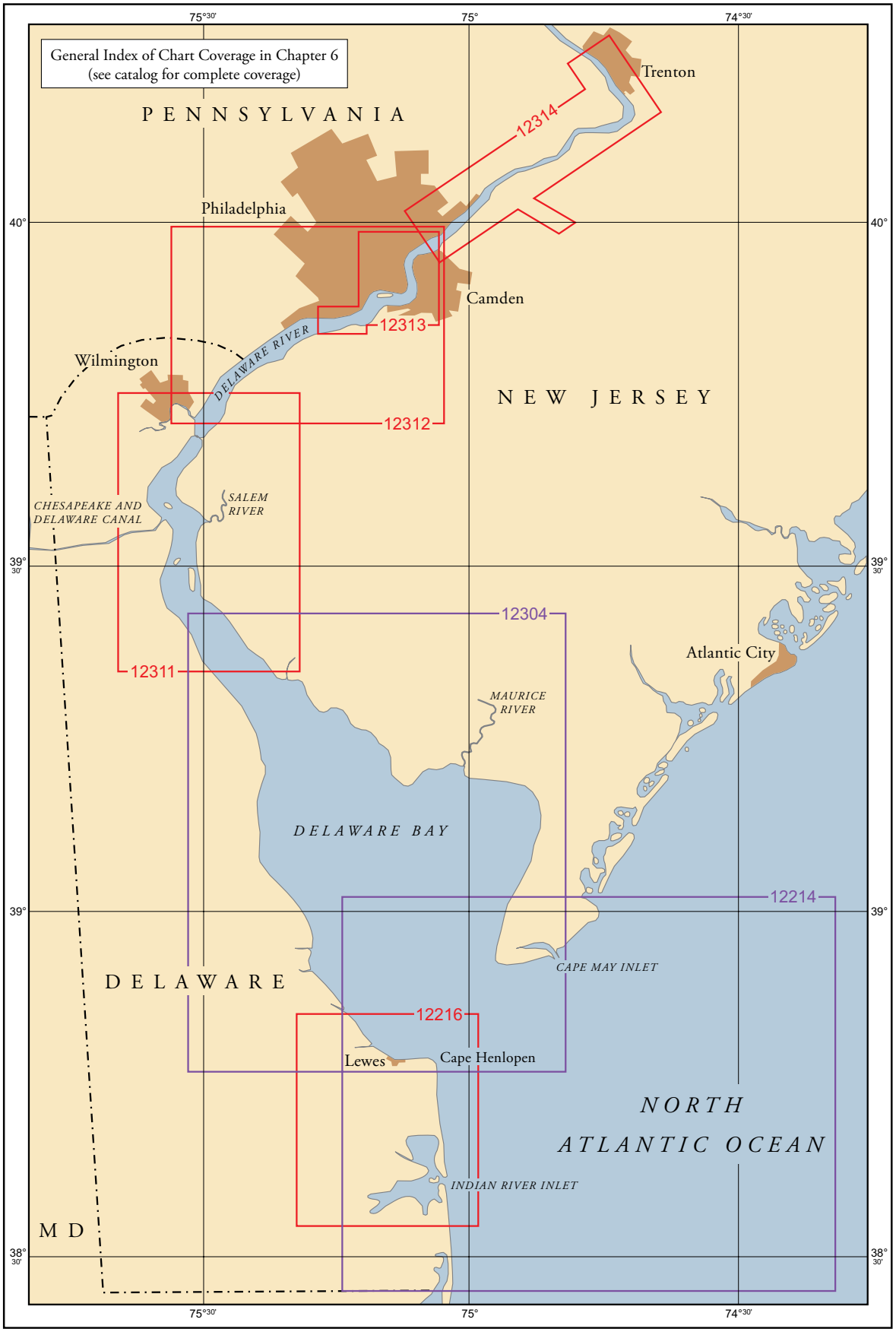
(163) The fixed highway bridge, over Cape May Canal at **Mile 114.3,** has a clearance of 55 feet. The overhead power cable immediately northwestward of the bridge has a clearance of 75 feet. The railroad bridge at **Mile 115.1** has a swing span with a clearance of 4 feet. A fixed highway bridge with a clearance of 55 feet is about 200 yards westward of the railroad bridge. Two submerged dolphins, hazardous to navigation, are on the southern edge of the channel on the west side of the bridge. Mariners are advised to proceed with caution when transiting this area. At **Mile 115.5,** an overhead TV cable with a clearance of 60 feet crosses the canal.

(164) The Cape May terminal of the **Cape May-Lewes Ferry** is on the north side of Cape May Canal at **Mile 117.3.** Significant shoaling is reported opposite the ferry berths along the southern bank of the canal and mariners are advised to stand clear of the area.

(165) The ferry basin contains six ferry slips with the main operating pier located at the extreme western end of the basin. Mariners are advised not to impede the passage of ferries as they proceed in and out of Cape May Canal West End jetties and maneuver into and out of their berths. A private sound signal is located on the main operating pier. Private vessels are prohibited from docking at the ferry terminal. The ferries are AIS equipped and monitor VHF-FM channels 13 and 16 while operating. More information about the ferry can be obtained at http://www.capemaylewesferry.com/.

(166) At **Mile 117.7,** Cape May Canal enters Delaware Bay between stone jetties which are 2 miles north of Cape May Light. The outer end of the jetties are marked by lights; a sound signal is on the north jetty. The project channel is offset to the north of the centerline between the jetties. Vessels should avoid overtaking or meeting ferries while they are transiting the entrance to the canal or the canal to their berths. Also, mariners should avoid anchoring within the jetties or outside the entrance to the canal.

(167) Choppy seas are reported to form on Delaware Bay when the wind and tidal currents are contrary; it is especially hazardous at the entrance to Cape May Canal. Large waves may form within the canal during periods of strong northwesterly winds.


General Index of Chart Coverage in Chapter 6
(see catalog for complete coverage)
75°30′
75°
74°30′
40°
39° 30′
39°
38° 30′
PENNSYLVANIA
Trenton
12314
Philadelphia
Camden
12313
DELAWARE RIVER
Wilmington
NEW JERSEY
12312
CHESAPEAKE AND DELAWARE CANAL
SALEM RIVER
12304
12311
Atlantic City
MAURICE RIVER
DELAWARE BAY
12214
CAPE MAY INLET
DELAWARE
12216
Lewes
Cape Henlopen
NORTH ATLANTIC OCEAN
INDIAN RIVER INLET
MD

Delaware Bay

(1) This chapter describes Delaware Bay and River, and their navigable tributaries, and includes an explanation of the Traffic Separation Scheme at the entrance to the bay. Major ports covered are Wilmington, Chester, Philadelphia, Camden, and Trenton, with major facilities at Delaware City, Deepwater Point, and Marcus Hook. Also described are Christina River, Salem River, and Schuylkill River, the principal tributaries of Delaware River, and other minor waterways, including Mispillion, Maurice, and Cohansey Rivers.

(2) The U.S. Coast Guard Captain of the Port, Sector Delaware Bay and the Mariner's Advisory Committee for the Bay and River Delaware jointly recommend the following precautionary measures be taken while transiting the Delaware Bay and River.

Navigation Guidelines for Bay and River Delaware-Non Commercial Vessels

(3) 1. The Delaware Bay and River is the port of call for large commercial ships and tug/barge units that can only transit in the main ship channel. All non-commercial shallow draft vessels are strongly encouraged to transit the Delaware Bay and River outside of the main shipping channel and maintain a listening watch on VHF-FM Channel 13 and 16.

(4) 2. The Delaware Bay is a large, open bay that is subject to confusing, and sometimes dangerous, sea and swell conditions due to a large fetch, strong currents, and numerous shoals. Also, it has very few harbors of refuge between the entrance and the C&D Canal. Vessels transiting the area are strongly encouraged to navigate as appropriate by monitoring current weather conditions and forecast, and filing a float plan. Commercial vessels transiting the main channel will be using VHF-FM Channel 13. Non-commercial vessels should maintain a listening watch on this VHF-FM channel and answer when called.

(5) 3. All foreign registered vessels, including non-commercial vessels, 100 tons and over, are required by Title 23 of the Delaware State Code and Title 55 of the Pennsylvania State Code to employ a Delaware or Pennsylvania state licensed pilot. Information about making arrangement for a pilot is described in this chapter, **Pilotage, Delaware Bay and River**.

(6) 4. Mariners should be especially vigilant while navigating in the Delaware Bay entrance area between Buoy CH and Brown Shoal Light. This highly congested area includes a pilotage transfer area, ferries crossing between Cape May and the Harbor of Refuge, and commercial vessels proceeding inbound and outbound to the main ship channel. Also, large deep-draft tankers will be proceeding out of the Big Stone Beach anchorage area and turning into the main navigational channel starting at Brown Shoal Light.

(7) 5. The Salem Power Plant is located at the extreme northwesterly portion of Delaware Bay where Delaware Bay turns into the Delaware River. The area in the vicinity of this prominent power plant is designated as a Security Zone. (See **165.553**, chapter 2, for limits and regulations.) The rule states: "No person may enter or navigate within this security zone unless authorized to do so by the U.S. Coast Guard or a designated representative."

(8) 6. Vessels proceeding to or from the C&D Canal should be aware that information about this waterway, along with appropriate regulations, is contained in Chapter 7 of this Coast Pilot. Vessels approaching the junction area of the C&D Canal and the Delaware River off Reedy Point should use particular caution. Ships and tug/barge units will be proceeding in and out of the main ship channel and in and out of the Bulkhead Shoal Channel that goes to the oil refinery inside of Pea Patch Island, and in and out of the Salem River Channel, as well as making the sharp turn into and out of the C&D Canal. As ships and tug/barge units that are entering and exiting the C&D Canal are subject to strong cross currents, all vessels including non-commercial vessels, should avoid meeting at this location. It is also strongly advised that recreational vessels transiting this area proceed outside the main channels when possible.

(9) 7. Vessels bound for Cape May should refer to Chapter 5 of this volume for a detailed description of this area. Vessels bound for the Harbor of Refuge, Breakwater Harbor and Lewes, Delaware should refer to the detailed description of this area that is titled Chart 12216 of this chapter.

Navigation Guidelines for Delaware Bay and River-Commercial Vessels

Delaware Bay Approaches and Entrance:

(10) 1. Vessels arriving at the Delaware Bay entrance are advised to use the Delaware sea-lane or the Five-fathom sea-lane. It is recommended that vessels with a draft exceeding 34 feet use the Delaware sea-lane from the southeast. Towing traffic transiting off the southeastern New Jersey coast is requested to use the inshore traffic route.

(11) 2. Vessels arriving at the Delaware Bay entrance are advised to contact the voluntary vessel traffic information service through the Delaware Pilot traffic tower on VHF-FM channel 14. Contact should be made upon a vessel's entrance into the appropriate sea-lane. Inbound towing traffic using the inshore route should contact the tower when off of McCrie Shoal Lighted Gong Buoy 2MS.

(12) 3. Vessels outbound are requested to contact the traffic tower when they are passing the Brown Shoal or Tanker Anchorage Approach Lighted Buoy A if exiting Big Stone Beach anchorage. Additionally, outbound towing traffic should report out of the entrance area while passing Delaware Bay Entrance Channel Lighted Buoy 8.

Anchorage Recommendations

(13) 1. Vessels using anchorage #12 off of Kaighns Point, in Philadelphia Harbor are recommended not to exceed 600 feet in length (LOA) or to exceed 34 feet in draft. Vessels over 30 feet in draft should anchor between Pier 78 and the Walt Whitman Bridge.

(14) 2. Vessels using anchorage #9 off of Mantua Creek, NJ are recommended not to exceed 700 feet in length (LOA) or to exceed 37 feet in draft. Vessels are requested to anchor in sections A or C, whenever there is sufficient room. Anchorage areas within sections B and D are used for maneuvering when docking and undocking vessels at adjacent piers. Vessels are requested to only anchor in sections B and D when there is insufficient space in sections A and C. It is also recommended that vessels with a LOA less than 350 feet to use the northern 0.5 mile of the anchorage which is off the Army Corps of Engineers dock or as close as practical.

(15) 3. Vessels using anchorage #6 off of Wilmington, DE are recommended not to exceed 700 feet in length (LOA) or to exceed 35 feet in draft. It is also recommended that vessels with a LOA less than 350 feet to use the southern end of the anchorage.

(16) 4. Vessels in excess of 700 feet in length (LOA) may anchor at anchorage #7 off of Marcus Hook, PA with a maximum draft of 40 feet. Vessels under 700 feet are requested to anchor in section A whenever there is sufficient room. Section B is needed for vessels over 700 feet in length. It is also recommended that vessels with a LOA less than 350 feet to use the northern 0.5 mile of the anchorage which is above lighted buoy 9M or as close as practical.

(17) 5. In the event that anchorage #3 (Reedy Point) is full, it is recommended that vessels waiting for clearance to use the C&D Canal use anchorage #3 (Artificial Island) or the upper end of Bombay Hook anchorage on Liston Range.

Lower River and Bay

(18) 1. The maximum fresh water draft for river transit from sea to Delair, New Jersey is 40 feet.

(19) 2. All vessels arriving with a fresh water draft in excess of 37 feet are to transit during flood current only.

(20) 3. All vessels over Panamax size beam (106 ft) having a fresh water draft in excess of 35'–06" shall only transit during flood current.

(21) 4. Vessels outbound from Paulsboro, NJ and above, having a fresh water draft of 37 feet and up to 40 feet should arrange to sail 2 hours after low water. Due to the extended time of transit for these particular deep draft vessels, two (2) river pilots will be arranged for transit to sea.

(22) 5. The maximum salt-water draft for entrance into Delaware Bay and Big Stone Beach anchorage is 55 feet, as per federal regulation. Qualified offshore advisors with portable DGPS units are available upon request from the Pilots' Association for the Bay and River Delaware.

(23) 6. Safe Under-Keel Clearance (UKC) should be assured for all transits, taking into consideration the vessel's squat and variations of actual tidal levels due to high winds, barometric pressure, and other atmospheric conditions. Actual tidal heights for many points in the Delaware Bay and River can be determined on the NOAA PORTS web site at http://co-ops.nos.noaa.gov/dbports/dbports.html, or by calling 866-307-6787 (866-30-PORTS).

(24) 7. Actual tidal levels and currents will vary from predicted heights due to high winds, barometric pressure, and other atmospheric conditions. Actual tidal heights, currents, bridge air gaps, and other data can be determined for many points in the Delaware Bay and River on the NOAA PORTS web site at http://co-ops.nos.noaa.gov/dbports/dbports.html, or by calling 866-307-6787 (866-30-PORTS).

(25) 8. The U.S. Army Corps of Engineers periodically surveys the bottom conditions of the Delaware Bay and River main channel and anchorages, publishing the results of these surveys at http://www.nap.usace.army.mil/channel/list.htm.

Vessel Reporting

(26) It is recommended that vessels report their position and status to the Maritime Exchange over VHF-FM channel 14 in the following situations:

(27) 1. When anchoring.

(28) 2. When getting underway.

(29) 3. When passing through Marcus Hook.

(30) 4. When entering or exiting the C&D canal.

(31) 5. When making fast to the dock.

(32) 6. Tugs operating without a barge are exempt from this recommendation. Tugs with barges are requested to report to the Philadelphia Maritime Exchange when anchoring and leaving all anchorages.

(33) It is important to stand by on VHF-FM channels 14 and 16 at all times. AIS should always be on if the vessel is equipped with it.

Delaware Bay and River Checkpoints

(34) 1. Inbound and outbound at Cape Henlopen

(35) 2. Entering or exiting the C&D Canal at Reedy Point

(36) 3. Inbound or outbound at Marcus Hook

(37) 4. First line or last line at any berth

(38) 5. Anchor up or anchor down at any anchorage

(39) For checkpoints 2 through 5, all vessels need to call the Maritime Exchange on VHF-FM channel 14.

Chesapeake and Delaware Canal

(40) 1. There is no recommended length limitation for vessels using the C & D canal, however the maximum draft limitation is 33 feet.

(41) 2. Vessels in excess of 760 feet are required to have an operational bow thruster for transit. Vessels in excess of 886 feet are required to have an operational bow and stern thruster for transit. These oversized vessels may use a tug assist instead of a working thruster.

(42) 3. The maximum combined beam of vessels transiting the C & D canal at the same time is 190 feet.

Upper Delaware River

(43) The Upper Delaware River pertains to the area of navigation from Delair, New Jersey to the head of navigation on the Delaware River at Trenton, NJ. The Maximum drafts referred to in these advisories pertain to navigation within the Federal maintained 40 feet channel which ends off Newbold Island, NJ.

Vessel Particulars

(44) 1. Any vessel whose beam exceeds 128 feet should transit through the Tacony–Palmyra Bridge during daylight only. Vessels of greater beam and vessels known to be difficult to maneuver should be scheduled on a case by case basis after consultation between the pilots and the operators prior to arrival and departure.

(45) 2. Maximum air draft should not exceed 132 feet.

(46) 3. Vessels of combined beam greater than 185 feet should not meet between the Delair Railroad Bridge and the Burlington Bristol Bridge.

(47) 4. Shipping traffic should avoid meeting above the Burlington Bristol Bridge.

Vessel Draft Inbound

(48) 1. Vessels less than 32'–06" FW may transit on any stage of the tide or current.

(49) 2. Vessels 32'–06" FW or greater up to 35'–00" FW in draft should arrive in Philadelphia harbor no later than 9 hours and 15 minutes, or earlier than 5 hours and 45 minutes from slack flood current at Cape Henlopen.

(50) 3. Vessels 35'–01" FW or greater up to 38'–06" FW in draft should arrive in Philadelphia harbor no later than 8 hours and 15 minutes, or earlier than 5 hours and 45 minutes from slack flood current at Cape Henlopen.

(51) 4. Vessels 32'–06" FW or greater up to 38'–06" FW in draft shall avoid meeting outbound shipping traffic above the Delair Railroad Bridge.

Vessel Draft Outbound

(52) 1. Vessel less than 32'–06" FW may transit on any stage of the tide or current.

(53) 2. Vessels 32'–06" FW or greater up to 38'–06" FW in draft, should sail from terminals above the Delair Railroad Bridge between 1 hour before high water and 3 hours after high water at the dock at which it is sailing.

(54) 3. Vessels 32'–06" FW or greater up to 38'–06" FW in draft, shall avoid meeting inbound shipping traffic above the Delair Railroad Bridge.

Tug Attendance

(55) 1. Vessels in excess of 375 feet should have a tug in attendance during upper river transits.

North Atlantic Right Whales

(56) Endangered North Atlantic right whales may occur within 30 miles of the Delaware coast in the approaches to Delaware Bay and ports of Philadelphia (peak season: November through April, although right whales have been sighted in the area year-round). (See **North Atlantic Right Whales**, indexed as such in Chapter 3, for more information on right whales and recommended measures to avoid collisions.)

(57) 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 Seasonal Management Area existing around Delaware Bay between November 1 and April 30. The area is defined as the waters within a 20-nm radius of 38°52'27.4"N., 75°01'32.1"W. (See **50 CFR 224.105** in Chapter 2 for regulations, limitations, and exceptions.)

COLREGS Demarcation Lines

(58) The lines established for Delaware Bay are described in **80.503,** chapter 2.

Chart 12214

(59) **Delaware Bay** and Delaware River form the boundary between the State of New Jersey on the east and the States of Delaware and Pennsylvania on the west. The bay is an expansion of the lower part of Delaware River; the arbitrary dividing line, 42 miles above the Delaware Capes, extends from Liston Point, DE, to Hope Creek, NJ. Deep-draft vessels use the Atlantic entrance, which is about 10 miles wide between Cape May on the northeast and Cape Henlopen on the southwest. Vessels with drafts less than 33 feet can enter Delaware River from Chesapeake Bay through the Chesapeake and Delaware Canal, which is described in chapter 7.

(60) **Mileages** shown in this chapter, such as Mile 0.9E and Mile 12W, are the nautical miles above the **Delaware Capes** (or "the Capes"), referring to a line from Cape May Light to the tip of Cape Henlopen. The letters N, S, E, or W, following the numbers, denote by compass points the side of the river where each feature is located.

(61) The approaches to Delaware Bay have few off-lying dangers.

(62) The 100-fathom curve is 50 to 75 miles off Delaware Bay, and the 20-fathom curve is about 25 miles off. Depths inside the 20-fathom curve are irregular, and in thick weather a deep-draft vessel should not approach the coast closer than depths of 12 fathoms until sure of its position; the safest approach or passing courses would be outside Five Fathom Bank Lighted Buoy F (38°46'49"N., 74°34'32"W.), and Delaware Lighted Buoy D (38°27'18"N., 74°41'47"W.).

(63) **Cape May** is the extensive peninsula on the northeast side of the entrance to Delaware Bay. **Cape May Light** (38°55'59"N., 74°57'37"W.), 165 feet above the water, is shown from a white tower with a red cupola and two white dwellings nearby on Cape May Point.

(64) The shoals off Cape May are mixed clay and sand and have the consistency of hardpan; the ridges run in approximately the same directions as the currents. **Cape May Channel,** 1 mile southwest of the cape, is an unmarked passage between shoals, with depths from 2 to 4 feet on either side. The channel is seldom used, and then only by fishing vessels and pleasure craft; local knowledge is required for safe passage.

(65) The channels have strong currents, and many tide rips form near **Prissy Wicks Shoal,** which has depths as little as 2 feet about 2 miles south of Cape May Light. In Cape May Channel, the current velocity is 1.5 knots on the flood and 2.3 knots on the ebb.

(66) **Overfalls Shoal** has a depth of 10 feet about 4 miles southwestward of Cape May Light. The 30-foot curve extends 3 miles farther in the general direction of Cape Henlopen and has a depth of 15 feet just inside its outermost limit.

(67) **McCrie Shoal**, 7 miles southeast of Cape May Light, has a least charted depth of 19 feet; a lighted gong buoy is on the southeast side of the shoal.

(68) **Five Fathom Bank** has a least charted depth of 19 feet about 15 miles eastward of Cape May Light. The area, enclosed by the 30-foot curve, is about 9 miles long, north to south, and about 2 miles wide. The greater part of Five Fathom Bank is within authorized fishtrap limits. Several buoys are moored around the bank.

(69) **Five Fathom Bank Lighted Buoy F** (38°46'49"N., 74°34'32'W.) is about 20 miles east-southeast of Cape May Light. The buoy is yellow, shows a flashing yellow light, and is equipped with a racon.

(70) **Cape Henlopen** (see also chart 12216), on the southwest side of the entrance to Delaware Bay, is marked by a number of towers and buildings. About 0.5 mile southward from the tip of the cape is a visual **reporting station** and radio control point for the Philadelphia Maritime Exchange.

(71) Cape Henlopen is building out from the northeastward to the northwestward; mariners are advised to exercise extreme caution in this area.

(72) A **naval restricted area** extends northeastward from Cape Henlopen to Overfalls Shoal. (See **334.110,** chapter 2, for limits and regulations.)

(73) **Hen and Chickens Shoal** extends southeastward from the tip of Cape Henlopen. The shoal has depths of 5 feet 1.3 miles from the tip of the cape and 12 feet 1.7 miles farther to the southeastward. The northeast side of the shoal is marked by buoys.

(74) The Cape May-Lewes Ferry crosses the main channel in Delaware Bay about 4 miles northward of Cape Henlopen. The ferry usually departs Lewes from the southern entrance to Harbor of Refuge and enters Lewes from the northern entrance to Harbor of Refuge.

(75) **Delaware Lighted Buoy D** (38°27'18"N., 74°41'47"W.), is about 28 miles southeastward of Cape Henlopen. The buoy is yellow, shows a flashing yellow light, and is equipped with a racon.

Traffic Separation Scheme

(76) A **Traffic Separation Scheme (Delaware Bay)** has been established off the entrance to Delaware Bay. (See chart 12214.)

(77) The scheme is composed basically of **directed traffic areas** each with one way inbound and outbound **traffic lanes** separated by defined **separation zones; a precautionary area;** and a **pilot boarding area.** The scheme is recommended for use by vessels approaching or departing Delaware Bay, but is not necessarily intended for tugs, tows, or other small vessels which traditionally operate outside of the primary traffic lanes or close inshore.

(78) **The Traffic Separation Scheme has been designed to aid in the prevention of collisions at the approaches to major harbors, but is not intended in any way to supersede or alter the applicable Navigation Rules. Separation zones are intended to separate inbound and outbound traffic lanes and to be free of ship traffic, and should not be used except for crossing purposes. Mariners should use extreme caution when crossing traffic lanes and separation zones**. (See Traffic Separation Schemes, chapter 1, for additional information.)

(79) The **precautionary area** for Delaware Bay entrance is inscribed by part of a circle with a radius of 8 miles centered on Harbor of Refuge Light (38°48'52"N., 75°05'33"W.) and extending from off Cape May Point to the shore south of Cape Henlopen with the traffic lanes fanning out from the circumference of the circle. The outer part of the northeast quadrant of the area is full of shoals, and there are shoal spots covered from 28 to 30 feet in the western extension of the Five Fathom Bank-Cape Henlopen Traffic Lane, about 1 mile west-northwestward of Delaware Bay North Approach Lighted Buoy 4. In the southeast quadrant, the eastern limit of Hen and Chickens Shoal is marked by Lighted Gong Buoy 1HC, Lighted Buoy 3HC, Delaware Bay Entrance Channel Lighted Buoy 5, and a red sector of Harbor of Refuge Light. A wreck, covered 56 feet, is about 1 mile north of Delaware Traffic Lane Lighted Buoy DC.

The usable part of the precautionary area has depths of 31 to over 100 feet. Several wrecks and obstructions, covered 46 to 61 feet, are about 1 to 1.7 miles east and southeast of Harbor of Refuge Light. Tugs and tows entering Delaware Bay from the north and northbound upon leaving the Bay often pass between Delaware Bay South Shoal Lump Lighted Buoy 8A and Delaware Bay Entrance Channel Lighted Buoy 6, and between Delaware Bay South Shoal Lump Buoy 8B and Delaware Bay Entrance Channel Lighted Buoy 8. This track allows tugs and tows to keep clear of large vessels entering the Bay through the pilot boarding area southward of Lighted Buoy 6. Since the precautionary area is used by both incoming and outgoing vessels, making the transition between Delaware Bay and the traffic lanes, extreme care is advised in navigating within the area.

(80) The **pilot boarding area** is about 2.5 miles southeastward of Cape Henlopen. (See pilotage later in this chapter.)

Eastern Directed Traffic Area:

Five Fathom Bank to Cape Henlopen Traffic Lane, Inbound.

(81) The eastward approach to Delaware Bay is north of Five Fathom Bank Lighted Buoy F (38°46'49"N., 74°34'32"W.) in Five Fathom Bank-Cape Henlopen Traffic Lane that tapers from 2 miles to 1 mile wide in its 16.4-mile length. By entering the traffic lane 1.5 miles north of Five Fathom Bank Lighted Buoy F, a course of **268°** follows the centerline of the traffic lane to the precautionary area, thence west-southwesterly courses for about 5 miles passing southward of Delaware Bay North Approach Lighted Buoy 4, to the pilot boarding area. Reported depths in the traffic lane are 39 feet or greater.

Cape Henlopen to Five Fathom Bank Traffic Lane, Outbound.

(82) The eastward exit by outbound vessels is south of Five Fathom Bank Traffic Lane Buoy FB (38°46'51"N., 74°55'35"W.) through Cape Henlopen-Five Fathom Bank Traffic Lane that expands from 1 mile to 2 miles wide. By entering the traffic lane 1 mile southward of Lighted Buoy FB, a course of **091.5°** follows the centerline of the outbound traffic lane. When seaward of Five Fathom Bank Lighted Buoy F steer usual courses to destination. Depths in the traffic lane are 40 feet or more.

Separation Zone

(83) The eastern separation zone between the inbound and outbound traffic lanes is 1 mile wide centered on a line through Five Fathom Bank Lighted Buoy F, and two lighted buoys 7.5 miles and 16.4 miles, respectively, westward from the Five Fathom Bank Lighted Buoy F.

Southeastern Directed Traffic Area:

Delaware to Cape Henlopen Traffic Lane, Inbound

(84) The southeastward approach to Delaware Bay is north of Delaware Lighted Buoy D (38°27'18"N., 74°41'47"W.) in Delaware-Cape Henlopen Traffic Lane that tapers from 2 miles to 1 mile wide in its 21-mile length. By entering the traffic lane 1.5 miles northeastward of Delaware Lighted Buoy D, a course of **322°** follows the centerline of the traffic lane to the precautionary area, thence a northwesterly course for an additional 4.5 miles leads to the pilot boarding area. Depths in the traffic lane are 58 feet or more.

Cape Henlopen to Delaware Traffic Lane, Outbound

(85) The southeastward exit by outbound vessels is southwestward of Delaware Traffic Lane Lighted Buoy DC (38°43'47"N., 74°57'33"W.) through Cape Henlopen-Delaware Traffic Lane that expands from 1 mile to 2 miles wide. By entering the traffic lane 1 mile southwestward of Lighted Whistle Buoy DC, a course of **145°** follows the centerline of the outbound traffic lane. When seaward of Delaware Lighted Horn Buoy D, steer usual courses to destination. Depths in the traffic lane are 48 feet or more.

Separation Zone

(86) The southeastern separation zone between the inbound and outbound traffic lanes is 1 mile wide centered on a line through Delaware Lighted Buoy D and three lighted buoys 6.7, 13.6, and 20.6 miles, respectively, on a bearing of **323°** from Delaware Lighted Buoy D.

Two-Way Traffic Route

(87) An additional Traffic Separation Scheme has been established to better separate large inbound vessels from tug and barge traffic transiting easterly and northerly along New Jersey coastal route just northward of Five Fathom Bank to Cape Henlopen Traffic Lane. The scheme consists of a two-way traffic lane. The lane has a 0.5 mile width and a least known depth of 30 feet. For purposes of INTERNATIONAL RULE 10, this additional scheme has been adopted by the IMO. (See Traffic Separation Scheme, chapter 1, and **33 CFR 167**, chapter 2, for additional information.)

(88) A **Regulated Navigation Area** has been established in Delaware Bay and River. (See **165.1 through 165.13, and 165.510,** chapter 2, for limits and regulations.)

Channels

(89) Delaware Bay is shallow along its northeastern and southwestern sides, and there are extensive shoal areas close to the main channel. The bay has natural depths of 50 feet or more for a distance of 5 miles above the Capes; thence Federal project depths of 40 feet to the upper end of Newbold Island, 110 miles above the Capes, thence 25 feet to the Trenton Marine Terminal, 115 miles above

the Capes, and thence 12 feet to the railroad bridge at Trenton. (See Notice to Mariners and latest editions of the charts for controlling depths.)

Anchorages

(90) In 1993, the NOAA ship WHITING reported vessels waiting offshore before taking on pilots and proceeding into Delaware Bay often anchor in the area between the Eastern Directed Traffic Area and Southeastern Directed Traffic Area. The area has a mostly sand bottom and offers good holding ground in depths of 31 to over 100 feet.

(91) Deep-draft vessels sometimes anchor in various places along the dredged channel through the lower bay, but usually continue to more sheltered areas in the upper bay and river. General, explosives, quarantine, and naval anchorages are in Delaware Bay and Delaware River. (See **110.1 and 110.157,** chapter 2, for limits and regulations.)

(92) Mariners are warned that submarine cables are in the north corner of the anchorage on the northeast side of New Castle Range. Furthermore, submerged pipelines are in the southwest part of the anchorage on the southeast side of Marcus Hook Range and in the middle of the anchorage southeast of Mifflin Range.

(93) In 1983, shoaling to 34 feet was reported in the northeast corner of the anchorage off Mispillion River in about 39°01'12"N., 75°13'42"W.

(94) In bad weather tows and small craft sometimes anchor behind the breakwaters north and west of Cape Henlopen.

Currents

(95) The current velocity is 1.8 knots in Delaware Bay entrance. (See the Tidal Current Tables for daily predictions.) The tables also list current differences and other constants for about 55 other places in Delaware Bay and River.

(96) The Tidal Current Charts, Delaware Bay and River, present a comprehensive view of the tidal-current movement in the bay and river, and provide a means of readily determining the direction and velocity of the current at various places throughout the waterway. The charts may be used for any year and are referred to daily predictions for Delaware Bay Entrance.

Chesapeake and Delaware Canal

(97) 1. There is no recommended length limitation for vessels using the C&D canal, however the maximum draft limitation is 33 feet.

(98) 2. Vessels in excess of 760 feet are required to have an operational bow thruster for transit. Vessels in excess of 886 feet are required to have an operational bow and stern thruster for transit. These oversized vessels may use a tug assist instead of a working thruster.

(99) 3. The maximum combined beam of vessels transiting the C&D canal at the same time is 190 feet.

Weather

(100) Strong northwesterlies are prevalent from November through March; gales are encountered about 1 to 3 percent of the time. It has been reported that with sustained northwesterlies over an extended period of time, lower than predicted low tides may occur in Delaware Bay and River and its tributaries. Seas build to 10 feet (3 m) or more about 1 percent of the time from November through March. High seas are most likely with northwest or southeast winds. Average seas run 3 feet (0.9 m) from October through March. During the summer, prevailing southerlies are often reinforced by the sea breeze and afternoon windspeeds may reach 15 to 25 knots. Strong easterly or southeasterly winds sometimes cause high tides in the Delaware Bay and River, resulting in the flooding of lowlands and damage to bay and river front properties.

(101) Visibility is generally good although sometimes hampered by fog, precipitation, smoke, and haze. During the spring and early summer advection fog is carried into the bay on east and southeast winds; they can occur when a front stalls to the south or the Bermuda High is displaced northward. These fogs can be tenacious; they often lift somewhat during the day, particularly near the shore. Visibilities are worst from December through June. Fog is most frequent during April, May, and June when visibilities drop below 0.2 mile (0.4 km) and about 3 percent of the time. Visibility of 2 miles (4 km) or less is most likely in January and February due to the greater frequency of precipitation, particularly snow. Fog is less likely in July, August, and September.

Ice

(102) In ordinary winters there is usually sufficient ice in Delaware Bay and River to be of some concern to navigation. Thin ice has been known to form early in December between Chester and Philadelphia, but the heavier ice usually does not begin to run before January. The tidal currents keep the ice in motion, except where it packs in the narrower parts of the river; tugs and larger vessels from Philadelphia keep these parts of the river open. The ice usually packs heavier than elsewhere at Ship John Shoal, at Pea Patch Island, at Deepwater Point, and below Gloucester City. Ice is rarely encountered after the early part of March.

(103) In severe winters, navigation has occasionally been interrupted above Chester, but the powerful vessels employed in the foreign and coasting trade keep the channel fairly open. The greatest danger is to wooden vessels, which are liable to be cut through on the waterline if they encounter thin ice.

Freshets

(104) Freshets are of rare occurrence, except in the vicinity of Trenton, and do not interfere with navigation unless accompanied by ice. Freshets and ice above Philadelphia are discussed further in the latter part of this chapter.

Pilotage, Delaware Bay and River

(105) Pilotage on Delaware Bay, Delaware River, and tributaries thereof is compulsory for all foreign vessels of 100 gross tons or more and all U.S. vessels under register engaged in the foreign trade or commerce of 100 gross tons or more. Pilotage is optional for all U.S. Government vessels and for all U.S. vessels in the coastwise trade that have on board a pilot licensed by the Federal Government for these waters.

(106) Pilot services are provided on a 24-hour basis by the Pilots' Association for the Bay and River Delaware, Chesapeake and Interstate Pilots Association (Federal Pilots), and Interport Pilots Agency, Inc. (Federal Pilots).

(107) The Pilots' Association for the Bay and River Delaware maintains its office in Philadelphia, PA, a pilot station in Lewes, DE, and a pilot watch tower on Cape Henlopen. The office address is 800 South Columbus Blvd., Philadelphia, PA 19147; telephone, 215–465–8340; fax, 215–465–3970; telex, 5101002653; cable, DELPILOTS in Philadelphia; and email address: dispatch@delpilots.com. The pilot station address is 41 Cape Henlopen Drive, Lewes, DE 19958; telephone, 302–645–2228; fax, 302–645–7822. The pilot watch tower at Cape Henlopen's telephone number is 302–645–8538; fax, 302–645–1728. Pilots are generally arranged for in advance through ships' agents and board incoming vessels from the pilot boat in the pilot boarding area off Cape Henlopen. Vessels are requested to contact pilots when inbound at either Delaware Lighted Buoy D or Five Fathom Bank Lighted Buoy F; both buoys are equipped with a racon. Vessels not requiring pilots are requested to contact "Cape Henlopen Tower" one hour prior to entering or departing Delaware Bay.

(108) The pilot boats are 50 feet long with black hulls, and white houses with the word "PILOT" in large letters on each side. The pilot station and pilot boats may be contacted on VHF-FM channels 14 and 16. The pilots carry portable radiotelephones for bridge-to-bridge communications on VHF-FM channel 13.

(109) The Pilots' Association for the Bay and River Delaware also provides qualified offshore "advisors" for the deepest draft vessels between Lighted Buoy "D" and the anchorage areas in Delaware Bay. A notice of 24 hours before estimated arrival is requested for this service.

(110) The Chesapeake and Interstate Pilots Association offers pilot services to U.S. vessels engaged in the coastwise trade and to public vessels between Cape Henlopen, Philadelphia and Delair. Arrangements for pilots are made through ships' agents or the pilot office in Norfolk (telephone, 757–855–2733). Pilots use commercial launch services and will meet vessels in the Pilotage Area off Cape Henlopen. Pilots arrive at the launch one hour prior to arrival and monitor VHF-FM channel 16 one hour prior to last ETA. Cellular telephone confirmation with the pilot office in Norfolk or the launch service can be made at 302–422–7604 if radio contact is unsuccessful. Advance pilot ordering with a 6-hour ETA update and any subsequent changes is requested.

(111) The Interport Pilots Agency, Inc. offers pilotage to public vessels and private vessels in the coastal trade transiting the Delaware Bay and River, Chesapeake and Delaware Canal, Upper Chesapeake Bay, New York Harbor, Long Island Sound and other areas along the northeast coast. Arrangements for their services are made 24 hours in advance through the ship's agents or by contacting Interport Pilots Agency, Inc., 906 Port Monmouth Road, Port Monmouth, NJ 17758–0236, telephone 732–787–5554 (24 hours), or by e-mail at interport@verizon.net. Additional information about Interport Pilots can be obtained at http://www.interportpilots.com.

(112) Pilots meet vessels at the pilot boarding area off Cape Henlopen using Delaware Bay Launch Service which monitors VHF-FM channels 16 and 9. Their (24 hour) phone number is: 302–422–7604. Additional information about Delaware Bay Launch Service may be found at: http://www.delawarebaylaunch.com.

(113) **Vessels entering Delaware Bay with drafts of 35 feet or more should use the Delaware to Cape Henlopen Traffic Lane.**

(114) **The Ports of Philadelphia Maritime Exchange**, in cooperation with the Pilots Association for the Bay and River Delaware, has established a communication and information system for vessels operating in the Delaware Bay and rivers. The lower bay area is monitored by "Cape Henlopen Tower" and the upper bay and rivers are handled by Ports of Philadelphia Maritime Exchange. Ship reporting services are provided through these two stations on VHF-FM channel 14. VHF-FM channels 20 and 74 are also used for port operations. Vessels are requested to pass information related to position, ETA, docking instructions, arriving/departing piers or anchorages in the upper bay and river to the Ports of Philadelphia Maritime Exchange.

(115) To obtain the maximum benefits of this service, ships are requested to monitor VHF channels 14 and 16 while transiting Delaware Bay and River.

Towage

(116) A large fleet of tugs operating out of Philadelphia is available at any time of the day or night for any type service required. Most of the tugboat companies will dispatch their vessels to any place in Delaware Bay or its tributaries. Some of the companies also have tugs available for deep-sea towing.

Quarantine, customs, immigration, and agricultural quarantine

(117) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(118) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) Vessels subject to boarding for quarantine inspection and destined to points above

Marcus Hook are required to anchor off the Marcus Hook boarding station. Detention cases are taken to Philadelphia General Hospital. (See **110.157 (a)(8), and (b),** chapter 2, for quarantine anchorage regulations and limits.)

(119) Philadelphia is a **customs port of entry**.

Coast Guard

(120) A **vessel documentation** office is in Philadelphia, PA. (See Appendix A for address.)

Supplies

(121) Bunker oil is available in quantity at Philadelphia and at several other places. Most large vessels are bunkered from barges alongside. Freshwater is unlimited in the larger ports. Small craft can obtain fuel and supplies not only in the larger ports, but at many of the smaller cities and towns along the river and bay.

Repairs

(122) The largest shipyard along Delaware River is at Chester. Many of the other cities and towns have boatyards for small craft.

Chart 12216

(123) Delaware Breakwater is the popular name for the anchorage areas behind the outer and inner breakwaters north and west of Cape Henlopen. Harbor of Refuge is the outer and deeper of the two areas; Breakwater Harbor is the inner area.

(124) **Harbor of Refuge** is behind the breakwater that begins 0.7 mile north of Cape Henlopen and extends 1.3 miles in a north-northwestward direction. A line of ice breakers, marked by lights at the outer ends, extends 0.4 mile in a west-southwest direction onto **The Shears** from a position 0.4 mile northwestward of the north end of the breakwater. **Harbor of Refuge Light**, (38°48'52"N., 75°05'33"W.), 72 feet above the water, is shown from a white conical tower on a cylindrical substructure near the south end of the breakwater; the station has a sound signal. A light marks the breakwater near its northern end.

(125) The harbor has depths of 17 to 70 feet between the breakwater and a shoal ridge, 8 to 12 feet deep, 1 mile to the southwestward. The deepest water is behind the Harbor of Refuge Light. The entrance from southeastward is deep and clear, while that from northwestward across The Shears has depths of 10 feet or less. Harbor of Refuge affords good protection during easterly gales. A strong set into Harbor of Refuge reportedly occurs across the southern entrance during tidal floods.

(126) **Breakwater Harbor**, between the inner breakwater and the shore, is excellent for light-draft vessels in all weather except heavy northwesterly gales and even then affords considerable protection.

(127) The inner breakwater begins 0.3 mile southwest of the tip of Cape Henlopen and extends 0.8 mile in a west-northwest direction. A light is shown from a skeleton tower on the west end of the breakwater. A dangerous sunken wreck, covered 15 feet, is about 0.3 mile 300° from this light.

(128) The Lewes terminal of the **Cape May-Lewes Ferry** is in the basin at the southwest end of Breakwater Harbor, 1.3 miles southwest of Delaware Breakwater Light. The basin is protected on its west side by a breakwater marked by private lights. Mariners are advised that the ferry maintains daily service between Lewes, DE and Cape May, NJ. Mariners are also advised not to impede the ferries while they are maneuvering near the ferry terminal or proceeding inbound and outbound via the Breakwater Harbor and the Harbor of Refuge. A private sound signal is located on the main operating pier and private vessels are prohibited from docking at the ferry terminal. All ferries are equipped with AIS and monitor VHF-FM channels 13 and 16 while operating. More information about the ferry may be obtained at http://www.capemaylewesferry.com/.

(129) Two dredged channels lead through Breakwater Harbor to the ferry basin; one leads from the northeastward along the southeast side of the harbor, and the other leads from the northward along the west side of the harbor. In 1980, the channel leading from the northeastward, and the ferry basin, had controlling depths of 10 feet. In 1980, the channel leading from the north had a controlling depth of 10 feet. Depths of 5 to 12 feet are reported in other parts of Breakwater Harbor. Cape Henlopen is steadily building out from the northeastward to the northwestward; mariners are advised to proceed with caution in this area.

(130) A **naval restricted area** is in the eastern part of the harbor. (See **334.110,** chapter 2, for limits and regulations.)

Chart 12304

(131) The low, marshy southwestern shore of Delaware Bay has few prominent marks above Cape Henlopen. There are scattered groups of houses, a few observation towers, and the lights and ranges of the tributaries.

(132) The tributaries are narrow and crooked, and vessels have difficulty making some of the turns. These streams are little used except by local fishing boats and by vessels carrying petroleum products to the towns along the banks. Strangers seldom attempt to enter. When entering or leaving these tributaries, allowance should be made for the bay currents which set across the entrances and have considerable velocity at times.

(133) There are many shoal spots with depths as shallow as 2 to 6 feet between Cape Henlopen and Bombay Hook Point (39°18.7'N., 75°26.5'W.). Most of the spots are unmarked and are subject to some change, both in depth and position. In 1980, shoaling to 5 feet was

reported about 3.1 miles east of the entrance to Leipsic River in about 39°14.3'N., 75°20.3'W. Strangers should proceed with caution in any of the passages southwest of the ship channel.

(134) Buoys mark a passage along the southwestern side of Delaware Bay from a point about 7.7 miles northwestward of Cape Henlopen and about 3 miles offshore to the entrance to Murderkill River. The many fish and oyster stakes in the area are to be avoided. The passage should not be attempted at night.

(135) Vessels entering the southwestern passage from northward usually leave the main ship channel about 2.5 miles below Ship John Shoal Light and head in a southerly direction for a position (39°04.0'N., 75°20.8'W.) about 1.4 miles east of Murderkill River Entrance Approach Light 1. A depth of about 7 feet can be carried through this passage, but care must be taken to avoid the 4 to 6 feet shoal spots about 3 miles off Port Mahon and the 5-foot shoal 3.3 miles off Little River.

(136) Roosevelt Inlet (chart 12216), 3 miles west of Cape Henlopen, is described in chapter 8.

(137) **Mispillion River**, protected at the entrance by jetties, empties from the westward into Delaware Bay 13 miles northwest of Cape Henlopen. The jetties, about 200 feet apart, extend about 1 mile southeastward from shore. The jetties are marked at the seaward ends by lights. The river is used by pleasure and fishing craft, and oil barges bound for Milford.

(138) In 2011, the controlling depth was 5 feet in the entrance channel to the jetties, thence 7 feet inside the jetties, thence 4 feet to a point in about 38°57'00"N., 75°19'46"W.; thence in 1981–1996, the controlling depth was 2 feet to the State Route 14 bascule bridge just east of **Milford**, thence the river channel shoals from 2 feet to 1 foot at Milford, Mariners are advised to approach the channel from the northeast for the greatest depths.

Currents

(139) The current velocity is 1.5 knots on the flood and 1.0 knot on the ebb. In 1980, it was reported that current velocities up to 3 knots on the flood and 4 knots on the ebb may be encountered in the river. Occasional periods of lower than normal low water levels were encountered.

Small-craft facilities

(140) Small-craft facilities on Mispillion River, just above the fixed bridges about 1 mile below Milford, can provide gasoline, diesel fuel, and water. The oil terminal about 1 mile below Milford has about 5 feet alongside, and the wharves at Milford have 5 to 7 feet alongside; mud bottom.

(141) Just inside the jetties, a dredged channel known as **Cedar Creek** extends southward for about 1 mile to a point just beyond the State Route 36 highway bridge. There are small-craft facilities and marinas on both sides of the bridge. In 2011, the midchannel controlling depth was 2 feet.

(142) An overhead power cable with a clearance of 57 feet crosses the river about 7 miles above the mouth. About 1.1 miles below Milford, the river is crossed by twin fixed highway bridges which have a clearance of 25 feet. About 0.5 mile below Milford, a highway bridge, with a 45-foot bascule span and a clearance of 5 feet, crosses the river. (See **117.1 through 117.59 and 117.241**, chapter 2, for drawbridge regulations.) An overhead power cable with a clearance of 45 feet is just southwest of the bascule bridge. A boatyard with a 25-ton mobile lift is just east of the bascule bridge. The fixed highway bridge at Milford is the head of navigation. A marine railway just below this bridge can haul out craft up to 55 feet for repairs.

Danger zone

(143) A **danger zone** of a naval aircraft bombing area extends 2 miles offshore off **Milford Neck,** just north of the entrance to Mispillion River. (See **334.120,** chapter 2, for limits and regulations.)

(144) **Murderkill River,** 21 miles northwestward of Cape Henlopen, is used by fishing vessels and a few pleasure craft. In 2011, the controlling depth was 1.5 feet in the dredged entrance channel; thence in 1957, reported depths of 4.5 feet to **Frederica**, about 6.5 miles above the mouth. A piling, which uncovers 3 feet, is on the northwest edge of the entrance channel in about 39°03'40"N., 75°23'22"W.

(145) A **247°** lighted range, a light, and buoys mark the entrance to Murderkill River.

(146) **Bowers Beach**, a summer resort on the north side of the entrance to Murderkill River, is prominent from offshore. Gasoline and some marine supplies are available. The wharves along Murderkill River are used extensively by fishing and oyster boats. The overhead cables crossing the river at Bowers Beach have a clearance of 50 feet, and the overhead power cable crossing about 4.3 miles above the mouth has a clearance of 62 feet. The fixed highway bridge, 6 miles above the mouth, has a clearance of 15 feet.

(147) **St. Jones River**, 0.5 mile north of Murderkill River, leads to the city of **Dover**, about 9.5 miles above the mouth, the capital of Delaware. In 1965, the controlling depths were less than a foot in the marked entrance channel, thence 4 feet to Lebanon, and about 3 feet to Dover.

Currents

(148) The current velocity off the entrance is about 0.7 knot.

(149) An overhead power cable with a clearance of 60 feet crosses the entrance to St. Jones River; another power cable, 2.4 miles above the mouth, has a clearance of 56 feet. The U.S. Route 113 highway bridge at **Barkers Landing,** about 3 miles above the mouth, has a fixed span with a clearance of 24 feet. A highway bridge at

Lebanon, 6 miles above the mouth, has a swing span with a width of 29 feet and a clearance of 6 feet. The overhead power cable at the drawbridge has a clearance of 50 feet. (See **117.1 through 117.49,** chapter 2, for drawbridge regulations.) The fixed highway bridge 9 miles above the mouth has a clearance of 11 feet. There are no landings at Dover.

(150) **Little River** (39°09.6'N., 75°24.5'W.) is 26 miles northwest of Cape Henlopen. A light marks the approach to the entrance. In 1974, the controlling depth was 2 feet in the entrance channel and 1.5 feet to the fixed highway bridge at the town of **Little Creek,** 2 miles above the river mouth. An overhead power cable with a clearance of 52 feet crosses the river 0.2 mile below the fixed highway bridge.

(151) **Mahon River** empties into Delaware Bay at **Port Mahon,** 27 miles northwest of Cape Henlopen. The river is used by commercial fishing boats, and small fuel barges. The controlling depth is about 8 feet in the marked entrance channel with deeper water inside. The Dover Air Force Base fuel pier, about 200 feet long with reported depths of 10 feet along the east side, is on the west side of the entrance. Some marine supplies can be obtained at the landing 0.4 mile above the mouth. A State-maintained boat launching facility with floating piers is on the west side of the river 0.8 mile above the mouth.

(152) **Leipsic River**, 30 miles northwestward of Cape Henlopen, is used occasionally by fishermen. In 1980, the reported depths were 5 feet in the entrance and deeper water inside to Leipsic, 7 miles above the mouth. The entrance is marked by a light. The wharves at **Leipsic** have depths of 5 to 8 feet alongside. The fixed highway bridge at Leipsic has a clearance of 13 feet.

(153) **Smyrna River** (39°22.0'N., 75°30.7'W.) (see also chart 12311), 39 miles northwest of Cape Henlopen, is navigable to **Smyrna Landing,** about 8 miles above the mouth and 1 mile from the town of **Smyrna.** In 1986, the entrance bar had a reported centerline controlling depth of 4 feet; thence in 1971, the reported centerline controlling depth was 8 feet to Flemings Landing, thence in 1964, 3 feet to Smyrna Landing.

(154) The entrance to the Smyrna River is protected by jetties. A daybeacon marks the outer end of the south jetty; ruins of the former south jetty light may be in the vicinity of the outer end of the jetty. In 1983, it was reported that the south jetty had collapsed; caution is advised. Within the river, the best water generally follows a midchannel course or favors the ebbtide bends.

(155) The current velocity is about 1.5 knots in the entrance to Smyrna River. State Route 9 highway bridge at **Flemings Landing,** 3 miles above the mouth, has a fixed span with a clearance of 8 feet. Overhead power cables with a least clearance of 48 feet cross the river about 0.8 mile above the bridge.

Local magnetic disturbance

(156) Differences of as much as 5° from the normal variation have been observed near the mouth of Smyrna River.

(157) The New Jersey side of Delaware Bay is low, with few prominent marks. The principal tributaries are Maurice and Cohansey Rivers, which can be used as harbors of refuge by small boats going between Cape May Canal and the Chesapeake and Delaware Canal; there are also many small creeks used mostly by fishing boats. General depths along this side of the bay are 7 to 15 feet, but there are many spots with depths of less than 6 feet. The shoals generally are not marked, and some local knowledge is needed to avoid them. Most of the creeks have bars across their mouths.

Tides and currents

(158) The channels have strong currents, and many tide rips form near Prissy Wicks Shoal. In unmarked Cape May Channel, the current velocity is 1.5 knots on the flood and 2.3 knots on the ebb. In the channel immediately northwestward of Overfalls Shoal, the velocity is 2 knots on the flood and 1.9 knots on the ebb.

(159) **Cape May Canal**, 2 miles northward of Cape May Light, is described in chapter 5 in connection with the Intracoastal Waterway. Farther north are several creeks. The first of any importance to navigation is **Bidwell Creek** (39°07.7'N., 74°53.4'W.), a drainage canal 12 miles north-northeastward of Cape May Light; a private lighted buoy is off the entrance. Strong currents may be encountered at and inside the entrance jetties, and entry at night during bad weather is extremely hazardous.

(160) **Deadman Shoal**, 9 miles north-northwestward of Cape May Light, has a minimum depth of 5 feet. The shoal is marked by a lighted buoy. A ridge with depths of 5 to 7 feet begins a mile westward of Deadman Shoal and extends southward for about 3 miles.

(161) **Dennis Creek**, 14 miles north-northeastward of Cape May Light, has depths of about 2 feet over the flats at the mouth and much deeper water inside to **Jakes Landing,** about 3 miles upstream. The creek is navigable for a considerable distance, but has no commerce and is little used.

(162) **Maurice River** flows into the northeast corner of **Maurice River Cove** 17 miles north-northwestward of Cape May Light. **East Point,** on the east side of the entrance, is marked by a light. Large shellfish plants are along the lower part of the river; shipbuilding facilities are at Dorchester.

(163) Maurice River is entered through a partially-dredged crooked channel that passes east of **Fowler Island,** which is in about the middle of the river's mouth. The northernmost section passing east of the island has natural depths.

(164) When approaching Maurice River, mariners should use care and not confuse the structure of East Point Light with a private house with a tower about 1.3 miles to the east; both landmarks are similar in appearance.

(165) In 2011, the controlling depth was 6 feet in the entrance channel, thence 8 feet to Mauricetown. The entrance channel is marked by lighted and unlighted buoys. The river channel above Mauricetown to Millville is marked by seasonal buoys. In 1996, a submerged object was reported in the channel, about 40 feet east of Buoy 7.

(166) For about 15 miles above the mouth of Maurice River, the channel is easily followed, but a sharp lookout is necessary to avoid stakes and dolphins extending into the river, many of which are broken off and covered at high water. Without local knowledge, it is safer to navigate this part of the river on a rising tide and proceed with caution. The upper part is narrow, but not difficult to navigate when the buoys are on station.

Currents

(167) The current velocity is about 1 knot in the entrance and about 2.3 knots at Mauricetown; at Millville, the flood is very weak and the ebb velocity is 0.4 knot. Owing to dereliction of the dikes along the river, greater current velocities have been reported; extreme care is required in docking.

Ice

(168) Ice may be encountered on Maurice River from the latter part of December through the early part of March.

(169) The shellfish industry is concentrated along the lower part of Maurice River with plants at the towns of **Bivalve**, **Port Norris**, and **Shell Pile**, about 3 miles above the mouth. The wharves have depths greater than 7 feet alongside. Gasoline is available.

(170) A marina on the west side of the river about 3.5 miles above the mouth has berthing with water and electricity, a 20-foot boat ramp, gasoline, diesel fuel, ice, and marine supplies. Hull and engine repairs can be made. A 50-foot marine railway and a 12-ton mobile hoist are available.

Small-craft facility

(171) There is a small-craft facility at Bivalve, on the east side of the river about 3 miles above the mouth, and several other facilities on the east side of the river from about 4.5 miles to 6 miles above the mouth. Most of these facilities can provide gasoline, diesel fuel, berths, and marine supplies.

(172) The shipyard at **Dorchester**, 9 miles above the mouth of Maurice River, has a 165-foot railway. A marina at Dorchester has gasoline, slips, a 60-foot marine railway, and a 20-ton mobile hoist. Hull and engine repairs can be made at all of the facilities.

(173) At **Mauricetown**, 10 miles above the mouth of Maurice River, there is a fixed highway bridge with a clearance of 25 feet. The overhead power cable 300 yards southward has a clearance of 60 feet.

(174) **Port Elizabeth** is 1 mile up **Manumuskin River** and about 12 miles above the mouth of Maurice River. About 1.5 miles above Port Elizabeth on Maurice River is a boatyard with a 40-foot marine railway; hull and engine repairs can be made.

(175) **Millville**, 20 miles above the mouth of Maurice River, has several factories but no municipal docks. An overhead power cable about 1 mile south of Millville has a clearance of 67 feet. The fixed highway bridge at Millville has a clearance of 4 feet, and is the head of navigation.

(176) **Egg Island Point** (39°10.8'N., 75°08.2'W.), 17 miles north-northwest of Cape May Light, is marked by a light. Southward of the point are **Egg Island Flats**, which have depths as little as 3 feet. The flats are thick with oyster-bed stakes. Between Egg Island Point and the inner end of the flats is a slough, with depths of 7 feet, used by local boats.

(177) **Fortescue Creek** is 4 miles north-northwestward of Egg Island Point. The entrance channel is marked by buoys. In 1986, the controlling depth was 2 feet over the bar at the mouth of the creek, thence 2 feet on the centerline of the creek to the highway bridge at **Fortescue,** a small summer settlement on the south side 0.4 mile above the entrance. Gasoline, diesel fuel, and some supplies can be obtained. Near the bridge are two marine railways that can haul out boats up to 45 feet.

(178) **Nantuxent Point**, 8 miles northwestward of Egg Island Point, is on the southeast side of the entrance of **Nantuxent Cove**, The point is marked by a light. A lighted buoy marks the outer limit of the 5-and 6-foot spots that extend over a mile offshore from the point.

(179) **Nantuxent Creek**, on the north side of Nantuxent Point, has depths of about 5 feet in the mouth and is navigated at high water by local fishing boats for about 5 miles to within 1 mile of the village of **Newport**.

Small-craft facilities

(180) A small-craft facility is at **Money Island**, a town about 1.2 miles above the mouth. Gasoline, berths, and limited marine supplies are available here.

(181) **Back Creek**, 27 miles northwest of Cape May Light and 2 miles northwestward of Nantuxent Point, is used by local boats as an anchorage. The entrance is marked by a private lighted buoy. The creek has depths of about 5 feet over the flats at the entrance and good depths for several miles above; however, local knowledge is advised. Berths, gasoline, and marine supplies are available at a landing 5 miles above the mouth. Hull and engine repairs can be made; lift, 6 tons.

(182) **Ben Davis Point** is on the northwest side of the entrance to Nantuxent Cove. It is marked by a light. Areas to be avoided are the rock awash about 1.2 miles southwestward of the point and 5-foot **Ben Davis Point Shoal**, which is 2.5 miles south-southwest of the point and within 0.7 mile of the main channel through the bay.

(183) **Cohansey River**, which empties into the northeast side of Delaware Bay 31 miles northwestward of Cape May Light, is used mostly by pleasure craft, although some petroleum is transported to Bridgeton. **Cohansey**

Delaware River (Delaware Memorial Bridge)
Image courtesy of Waterway Images (2006)

Light (39°20'30"N., 75°21'41"W.), 42 feet above the water, is shown from a black skeleton tower with a white daymark on the south side near the natural entrance. A dredged cut through the narrow neck of land on which the light stands gives a more direct approach to the river; the cut, 0.3 mile northwest of Cohansey Light, is marked on its west side by lights at the inner and outer ends. The river is unmarked above the dredged cut. In 1990, the controlling depths were 5 feet to Fairton; thence in 1990–2003, shoaling to less than 1 foot to Bridgeton.

(184) The usual approach to Cohansey River is along the axis of the dredged cut, but the natural channel eastward of Cohansey Light is sometimes used; the latter has a controlling depth of about 7 feet, and unmarked shoals with depths of 4 to 6 feet must be avoided on either side. Local knowledge is advised when using this approach and in the dredged channel in the upper part of the river off Bridgeton.

Currents

(185) High water at Bridgeton is about 2 hours later than at the entrance. The current velocity is about 1.3 knots half a mile above the entrance and less than 0.5 knot at Bridgeton.

Small-craft facilities

(186) There are small-craft facilities near **Greenwich Pier**, 4 miles above the mouth, and at **Fairton**, 14 miles above the mouth. Gasoline, diesel fuel and marine supplies are available; lift of 30 tons can handle hull and engine repairs.

(187) **Bridgeton**, about 17 miles above the mouth, is an important manufacturing town and rail center, but has no municipal piers or marinas. Broad Street bridge at Bridgeton has a 40-foot bascule span and a clearance of 6 feet, but is kept in a closed position. (See **117.711**, chapter 2, for drawbridge regulations.) The overhead power cable 0.2 mile below the bridge has a clearance of 44 feet.

Chart 12311

(188) **Bay Side** (39°22.8'N., 75°24.2'W.) is a fishing resort on the east side of the entrance to **Stow Creek**. The creek has very little traffic.

(189) The dividing line between **Delaware River** and Delaware Bay is 42 miles above the Delaware Capes. The line, defined arbitrarily by the legislatures of Delaware and New Jersey, extends from a monument on **Liston Point**, DE, to a similar monument on the south side of the entrance to **Hope Creek**, NJ.

(190) In 1967, the monument on Liston Point was reported destroyed; and in 1983, the monument on the

south side of the entrance to Hope Creek was also reported destroyed. Remains of the structure from Liston Point may exist up to 100 feet offshore and may be covered during high tide.

Bridges

(191) For regulations affecting drawbridges crossing the Delaware River see **117.1 through 117.59, 117.716, and 117.904**, chapter 2.

(192) **Artificial Island**, Mile 44E, is the name given to the peninsula formed by the filled area covering most of **Baker Shoal**. The domes of the Salem Nuclear Power Plant, at the south end of the island, are prominent from upstream and downstream. An unmarked channel leads to a basin south of the powerplant. In 1980, 18 feet was reported in the channel and basin.

Local magnetic disturbance

(193) Differences of as much as 2° to 5° from normal variation have been observed along the channel from Artificial Island to Marcus Hook.

(194) **Alloway Creek**, Mile 47.5E, has a controlling depth of about 3 feet to Quinton. The approach to Alloway Creek is unmarked. The shoals on either side of the mouth must be avoided. Above the mouth, the best water is not always in midstream, and some local knowledge is needed to find it. The current velocity is 2.1 knots 0.2 mile above the entrance and about 1.4 knots at New Bridge. An overhead power cable crossing the creek about 0.8 mile above the mouth has a clearance of 80 feet.

(195) The Mill Street highway bridge at **Hancocks Bridge**, 4 miles above the mouth of Alloway Creek, has a swing span with a width of 40 feet at the north draw and a clearance of 4 feet. An overhead power cable on the west side of the bridge has a clearance of 50 feet. Salem County Bridge at **New Bridge**, 5.5 miles above the mouth, has a swing span with a width of 35 feet and a clearance of 3 feet. The State Route 49 highway bridge at **Quinton**, 8 miles above the mouth, has a swing span with a width of 30 feet and a clearance of 3 feet. The bridge is maintained in the closed position. (See **117.1 through 117.59 and 117.701**, chapter 2, for drawbridge regulations.) An overhead power cable on the west side of this bridge has a clearance of 50 feet.

(196) **Salem River** is entered through **Salem Cove** at Mile 50E, across the Delaware River from the entrance to the Chesapeake and Delaware Canal. The approach channel follows the southeast side of Salem Cove for about 2 miles to the mouth of the river; it is marked by a lighted buoy, lights, and a lighted **027.3°** range. Within the river, the channel enters a land cut 0.8 mile above the mouth, thence leads to a basin at **Salem**, thence to the fixed highway bridge in Salem. The fixed highway bridge has a clearance of 10 feet. In 2009, the controlling depths were 11.8 feet (13.8 feet at midchannel) to Sinnickson's Landing and through the landcut, thence 15.4 feet to the head of the project near the highway bridge at Salem, thence 10.4 to 12.5 feet was in the basin. Above the bridge, in 1976, the depths were 2 feet or less. Overhead power cables on the Salem River have a least clearance of 50 feet.

Tides and currents

(197) The tides at Salem are about 35 minutes later than at Reedy Island. The current velocity is about 1.6 knots in the entrance. The maximum expected current in the land cut is 3 knots.

(198) State Route 49 highway bridge, 1.8 miles above the mouth, has a bascule span with a clearance of 5 feet. (See **117.1 through 117.59 and 117.749,** chapter 2, for drawbridge regulations.) Overhead power cables above and below the bridge have a least clearance of 50 feet.

(199) Several marinas and boatyards are along the north bend of Salem River and at Salem; slips, gasoline, and some marine supplies are available; hull and engine repairs can be made. Mobile lifts up to 25 tons are available along Salem River.

(200) **Supawma Meadows National Wildlife Refuge** is located on the E shore of the Delaware River N of its confluence with the Salem River. (See **MPA 6-5**, Appendix C, for additional information.)

(201) **Appoquinimink River** (39°26.9'N., 75°34.7'W.), Mile 44W, has no commerce and is little used except by pleasure craft and a few fishing boats. Controlling depth to Odessa is about 2 feet. The current velocity in the entrance is about 1.1 knots. The fixed highway bridge, 3 miles above the mouth, has a width of 37 feet and a clearance of 6 feet. The fixed highway bridge at **Odessa**, 5.5 miles above the mouth, has a width of 38 feet and a clearance of 4 feet. Overhead power cables across the river have a minimum clearance of 45 feet.

(202) **Reedy Island**, Mile 48W, is the site of a former Federal quarantine and detention station. The pier on the channel side of the island has a depth of 10 feet at the outer end; the current velocity is about 2.5 knots off the pier. A submerged dike extends 3 miles southward from Reedy Island and roughly parallels the western shore; the dike is marked by lights, and unlighted seasonal warning buoys.

(203) **Port Penn** is a village on the western shore opposite Reedy Island. The best approach to the village is through an opening in the Reedy Island dike; the opening, 0.2 mile south of the island, is 5 feet deep and 150 feet wide, and marked on each side by a daybeacon. Approaches to the village from north of Reedy Island or from south of the dike are over flats with depths of 2 feet. Anchorage depths off Port Penn are 15 feet or more, but in 1980, none of the landings at the village were usable.

(204) The **Chesapeake and Delaware Canal**, Mile 51W, is described in chapter 7.

(205) **Pea Patch Island**, Mile 53W, is the site of **Fort Delaware State Park**. The wharf, on the main channel, is marked by a light. In 1983, the wharf was in ruins. In 2002, shoaling to 7 feet was reported at the channel entrance. A dike, mostly submerged at high water, extends

northward along **Bulkhead Shoal** for about 3 miles from Pea Patch Island; the dike is marked by lights and daymarkers. A private sound signal and racon are located on an overhead power cable tower about 0.8 mile N of Pea Patch Island. The current velocity is 2.3 knots in the main channel east of the island. A ferry runs between Delaware City and Pea Patch Island on weekends, April through October.

(206) **Delaware City** is on the southwest side of Delaware River opposite Pea Patch Island. **Delaware City Branch Channel** extends southward from the riverfront of the town to the Chesapeake and Delaware Canal. A light marks the Delaware River entrance to Delaware City Branch Channel. In 1999, the controlling depth was 5 feet in the channel entrance from the Delaware River shoaling rapidly along the sides; thence in 1983, the controlling depth was 6 feet in the channel. Depths alongside the Delaware City bulkhead were 7.5 feet to bare in 1999. The entrance channel at the Chesapeake and Delaware Canal end of the branch channel was reported, in 2000, to have a depth of 7 feet; a submerged pile was reported on the west side of the channel. Mariners are cautioned to stay well inside the north and south entrance channels.

(207) A highway bascule bridge with a clearance of 6 feet crosses the channel about 0.6 mile above the entrance; the bridge is maintained in the closed position. An overhead power cable 500 feet north of the bridge has a clearance of 64 feet; overhead power and telephone cables just south of the bridge have a clearance of 30 feet.

(208) Berths, gasoline, diesel fuel, ice, and some marine supplies are available on the west side of Delaware City Branch Channel at a marina 0.3 mile southwest of the northeast entrance. Hull and engine repairs can be made; a 25-ton mobile hoist is available.

(209) A privately dredged cut with a reported controlling depth at midchannel of 26 feet in 2010, marked by a private **306°** lighted range and private buoys, extends northwestward through **Bulkhead Shoal Channel** from Delaware River main channel to the Enterprises Refinery terminal on the northwest side of Delaware City. The three offshore wharves at the terminal have a combined berthing area of 2,850 feet with dolphins. In 1984 depths of 28–38 feet were reported alongside; deck height, 15 feet. The storage capacity at the terminal is 8.8 million barrels. Water is available on the wharves.

(210) The current velocity is 2.1 knots between Pea Patch Island and Delaware City.

(211) An overhead power cable with a clearance of 223 feet crosses the river about 1.5 miles above **Fort Delaware Light 5N** (39°35'25"N., 75°33'55"W.). The power cable support tower, on the west side of the channel, has a private sound signal and a racon.

(212) **New Castle**, Mile 57W, has little waterborne commerce. The principal public wharf was in ruins in 1983. Several stone fenders that stand about 5 feet above high water protect the wharves from drifting ice. A 40-foot marine railway, 0.4 mile north-northeast of the public wharf, can handle boats for emergency repairs at high water.

(213) **Pennsville**, Mile 58E, has a small marina with an 8-ton mobile hoist; minor repairs can be made.

(214) A partially submerged jetty, marked by seasonal buoys, is in **Travis Cove** at about Mile 58.7E. In 2009, debris was reported spilling westward; caution advised.

(215) **Delaware Memorial Bridge**, Mile 60, has twin suspension spans over the main channel with a clearance of 188 feet for the middle 800 feet.

(216) **Salem Canal,** at the east end of the bridges, once gave access to the upper part of Salem River. The route is now blocked in several places, the first being at a dam about 300 yards above the mouth.

(217) **Deepwater Point,** 0.6 mile above the New Jersey end of the Memorial Bridge, is the site of the E.I. duPont de Nemours and Co., Chambers Works Main Wharf. The 550-foot offshore wharf (39°41'37"N., 75°30'39"W.) provides 715 feet of berthing space. Depths of 33 feet are reported alongside with a deck height of 10.5 feet. Acids and organic chemicals are handled at the wharf with a rail connection to the rear.

(218) **Pigeon Point**, Mile 60.5W, has a railroad car-float bridge. Railroad cars are barged to Deepwater Point and Thompson Point.

(219) **Christina River**, Mile 61.5W, is the approach to the city of Wilmington and to the towns of Newport and Christiana.

Channels

(220) A Federal project provides for a 35-foot channel from Delaware River to Lobdell Canal and 38 feet in a turning basin opposite the Wilmington Marine Terminal. The channel is subject to frequent shoaling. (See Notice to Mariners and the latest editions of the charts for controlling depths.) A steel sheet-pile jetty, 0.4 mile long and marked at its outer end by a light, is on the south side of the entrance. The channel is marked by a **293°** lighted range and by a lighted buoy on the north side of the entrance.

(221) Above Lobdell Canal, the midchannel controlling depth in Christina River, in 2004, was 10.1 feet to the Market Street bascule bridge, about 2.8 miles above the mouth, thence in 1960, 5.5 feet to the bascule bridge at Newport. Above this point local knowledge is necessary to carry the best water.

(222) **Port of Wilmington, Marine Terminal Wharf, Berths 1–7** (39°43' 06"N., 75°31'25"W.): 3,435-foot face and berthing space, 35–38 feet alongside; deck height, 12 feet; 46,400 square feet covered storage area; two steel storage tanks with a capacity of 3 million gallons; rail and highway connections; receipt and shipment of general cargo and automobiles; receipt of dry bulk commodities, including gypsum rock, and of fruit, wood pulp, lumber, and miscellaneous chemicals; owned by Diamond State Port Corp., and operated by Port of Wilmington.

(223) **Port of Wilmington, Marine Terminal Floating Berth** (39°43'01"N., 75°31'05"W.): offshore wharf with 515-foot face and berthing space, 35 feet alongside; one refrigerated storage tank with a capacity of 6 million gallons; rail and highway connections; receipt and shipment of orange juice concentrate and automobiles; owned by Diamond State Port Corp., and operated by Port of Wilmington.

(224) **Delaware Terminal Co., Port of Wilmington, Marine Terminal Tanker Berth** (39°42'58"N., 75°30'51"W.) is owned by the U.S. Government and operated by Delaware Terminal Co., Inc. The wharf has a 50-foot face and can accommodate vessels up to 1,000 feet with dolphins. Depths of 38 feet are reported alongside; deck height, 12 feet. Petroleum products are handled at the berth.

(225) **Port of Wilmington, Auto Terminal RoRo Berth** (39°42'37"N., 75°30'45"W.): offshore wharf connected to shore by an 845-foot trestle with an 875-foot face for berthage; 38 feet alongside; 15 acres adjoining storage area; receipt of automobiles and RoRo cargoes; owned and operated by the Port of Wilmington.

(226) **Lobdell Canal,** on the south side of Christina River 0.9 mile above the mouth, is not used.

(227) **Brandywine Creek**, on the northeast side of Christina River 1.6 miles above the mouth, has depths of about 4 feet to the railroad bridge 1 mile above its mouth. The channel is rocky above the railroad bridge, but depths of 1 to 2 feet can be carried 0.7 mile to Market Street bridge, above which there are rapids. The river is used mostly for anchorage and storage of pleasure boats.

(228) An overhead power cable about 0.1 mile above the mouth has a clearance of 59 feet.

(229) The railroad bridge about 1 mile above the mouth of Brandywine Creek and the highway bridges above it have fixed spans with a minimum width of 40 feet and a clearance of 10 feet. The overhead power cable 300 yards above the railroad bridge has a clearance of 34 feet.

(230) **Wilmington**, on the north side of Christina River 2.5 miles above the mouth, has large manufacturing interests. Both sides of the river at the city are lined with wharves which support a large traffic in barges. The deepwater facilities, which were described earlier, are on the south side of the river just inside the entrance. For a complete description of the port facilities at Wilmington refer to Port Series No. 8, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(231) **Newport**, on the north side 6.8 miles above the mouth, is at the head of practical navigation.

Anchorages

(232) Vessels must not anchor in Christina River channel within the city limits of Wilmington or tieup at any wharf more than two abreast without permission of the harbor commissioners. A general anchorage is off Deepwater Point, south of the river entrance. (See **110.1 and 110.157 (a)(7) and (b),** chapter 2, for limits and

regulations, and Appendix B for **Wilmington climatological table.)**

Weather

(233) Wilmington is in a region about midway between the rigorous climates of the North and the mild climates of the South and located at the head of the Delaware Bay.

(234) Rainfall distribution throughout the year is rather uniform with the spread between the wettest month (July) and the driest month (February) being only 1.42 inches (36.1 mm). The average annual precipitation for Wilmington is 41.48 inches (1054 mm). The greatest 24-hour rainfall occurred in July 1989 when 6.63 inches (168.4 mm) fell.

(235) Snowfall occurs on about 30 days per year on the average; however, an average of only 4 days annually produce snowfalls greater than 1.5 inches (38.1 mm). The average annual snowfall is 20.7 inches (525.8 mm). January is the snowiest month but it is trailed closely by February. The greatest 24-hour snowfall occurred in January 1996 when 22.0 inches (558.8 mm) fell.

(236) Glaze or freezing rain occurs on an average of only once per year, generally in January or February. However, some occurrences have been noted in November and December. Some years pass without the occurrence of freezing rain, while in others it occurs on as many as 8 to 10 days.

(237) Since 1950, eight tropical storms have influenced the Wilmington area and the direction of approach has always been from the south through southwest. Fortunately, all have been in the dissipation stage and no hurricane damage has been noted.

(238) In summer, the area is under the influence of the large semipermanent high-pressure system commonly known as the Bermuda High. Based on climatology, it is usually centered over the Atlantic Ocean near latitude 30°N. This high-pressure system brings a circulation of warm, humid air masses over the area from the deep South. The proximity of large water areas and the inflow of southerly winds contribute to high relative humidities during much of the year.

(239) January is the coldest month, and July, the warmest. The average annual temperature at Wilmington is 54.5°F (12.5°C) with an average high of 63.8°F (17.7°C) and an average low of 44.8°F (7.1°C). The warmest temperature on record at Wilmington is 102°F (38.9°C) last recorded on July 3rd and 4th, 1966. The coldest temperature on record is -14°F (-25.6°C) last recorded in January 1985. Each month, October through May, has recorded temperatures below freezing (0°C) while each month, June through September, has seen temperatures in excess of 100°F (37.8°C).

(240) (See Appendix B for **Wilmington Climatological table**.)

Bridges

(241) There are no bridges or overhead power cables over the deepwater section of Christina River. From Lobdell Canal to just above the bridge at Newport, 6.8 miles above the mouth, the least clearance of drawbridges is 2 feet and fixed bridges, 22 feet. (See **117.1 through 117.59 and 117.237,** chapter 2, for drawbridge regulations.) In 2008, it was reported that the Christina River swing bridge at mile 5.4 was in ruins; caution is advised. The least clearance of overhead power cables is 42 feet.

(242) In 1984, partially submerged concrete structures of a former bridge were reported about 4.9 miles above the mouth of the river near Interstate 95 fixed bridge; caution is advised.

Currents

(243) The current velocity is about 0.8 knot at Wilmington.

Quarantine, customs, immigration, and agricultural quarantine

(244) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(245) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) Vessels subject to boarding for quarantine inspection are required to anchor off Marcus Hook boarding station, 7 miles up the Delaware River from Wilmington.

(246) Wilmington is a **customs port of entry.**

Harbor regulations

(247) The speed of vessels in Christina River is limited to 8 miles per hour. (See **162.35,** chapter 2.)

Supplies

(248) Water can be supplied at the Wilmington Marine Terminal from the city mains. The nearest facilities for supplying deep-draft vessels with bunker oil are at Marcus Hook. Light-draft vessels can obtain fuel at a wharf on the south side of Christina River just above the second bridge; the depth at the wharf is about 8 feet. Small craft can obtain gasoline and supplies at Wilmington near the second bridge over Christina River.

Repairs

(249) **Repairs** can be made to light-draft vessels and small craft at the boatyards near the second bridge on Christina River; largest marine railway, 110 feet. Small-craft repairs can also be made at a boatyard above the second bridge on Brandywine Creek.

Communications

(250) Railroad passenger service (Amtrak) is available at the Wilmington station 5 miles from the port. The local airport is the New Castle County Airport (formerly the Greater Wilmington Airport), 5 miles southwest of Wilmington; no regular scheduled passenger service is available. The nearest airport with regular scheduled

passenger service is Philadelphia International Airport, 22 miles northeast of Wilmington.

Chart 12312

(251) **Carneys Point** (39°42.9'N., 75°29.1'W.), Mile 61.8E, is across the Delaware River from Christina River.

Speed

(252) The Corps of Engineers has requested that masters limit the speed of their vessel when passing wharves and piers so as to avoid damage by suction or wave wash to property or persons.

(253) **Edgemoor** is at Mile 63W. The wharves of the E.I. duPont de Nemours Co., Edgemoor Plant, have depths of 20 feet reported at their outer ends.

(254) A dike with its outer end submerged extends 0.3 mile offshore from **Oldmans Point,** on the eastern shore of Delaware River 2 miles above Edgemoor. About 0.3 mile southward of the dike are the ruins of a long pier.

Local magnetic disturbance

(255) Differences of 2° to 5° from normal variation have been observed astride the Delaware River Channel from Oldmans Point to the mouth of Oldmans Creek.

(256) **Oldmans Creek**, Mile 66E, has an unmarked channel leading from the Delaware River to the mouth of the creek. Due to shoaling, mariners should exercise extreme caution when transiting this area.

(257) A vertical-lift bridge and two swing bridges cross the creek between the mouth and **Pedricktown,** about 3.6 miles above the mouth; all are kept in a closed position. (See **117.737,** chapter 2, for drawbridge regulations.) The limiting clearance of the bridges is 1 foot at the second bridge, and the minimum width is 36 feet at the second bridge. In 1979, the swing span of the second bridge was being replaced with a removable span. The design clearances of the new span are 3 feet vertical and 14 feet horizontal.

(258) **Marcus Hook**, Mile 69N, is an important petroleum center where large quantities of crude oil are received and refined petroleum products are shipped. Vessels can be bunkered at the rate of 1,500 to 5,000 barrels per hour and the companies also operate barges for bunkering in the stream or alongside other wharves.

(259) A Government wharf at Marcus Hook has a depth of 14 feet at the outer end.

(260) On the southeast side of the main ship channel opposite Marcus Hook is a **general anchorage** with a preferential area for vessels awaiting quarantine inspection. (See **110.1 and 110.157 (a) (8) and (b),** chapter 2, for limits and regulations.)

Currents

(261) The current velocity is about 1.7 knots at Marcus Hook.

Quarantine, customs, immigration, and agricultural quarantine.

(262) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(263) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

Wharves

(264) There are deep-draft wharves and piers along the Delaware River at Marcus Hook, PA and adjacent Claymont, DE. All have direct highway, railroad connections, water and electrical shore power. The alongside depths are reported depths. (For information on the latest depths contact the operator.) Only deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 8, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(265) **Oceanport Industries Pier** (39°48'06"N., 75°25'59"W.): 36-foot face, 36 feet alongside; deck height, 16 feet; 500,000-barrel storage capacity; receipt of dry bulk commodities; owned and operated by Oceanport Industries, Inc.

(266) **General Chemical Corp., Delaware Works Upper Pier** (39°48'09"N., 75°25'51"W.): lower side 744 feet long; 18–30 feet alongside; deck height, 12 feet; upper side 747 feet long; 18–30 feet alongside; deck height, 12 feet; storage tanks to 1,042,000 gallons; shipment of sulfuric acid; owned and operated by General Chemical Corp.

(267) **Sun Refining and Marketing Co., Marcus Hook Wharf No. 3C** (39°48'22"N., 75°25'18"W.): face 120 feet long, 1,000 feet of berthing space; 40 feet alongside; deck height, 15 feet; 14¼-million-barrel storage capacity; receipt and shipment of petroleum products, liquified petroleum gas, and petrochemicals; receipt of crude oil, bunkering vessels; owned and operated by Sun Refining and Marketing Co., a subsidiary of Sun Oil Co. Inc.

(268) **Sun Refining and Marketing Co., Marcus Hook Wharf Nos. 3A and 3B** (39°48'26"N., 75°25'05"W.): face 71 feet long, 1,000 feet of berthing space; 13 to 35 feet alongside; deck height, 15 feet; receipt and shipment of petroleum products, petrochemicals, and liquified petroleum gas, receipt of crude oil, bunkering vessels; owned and operated by Sun Refining and Marketing Co., a subsidiary of Sun Oil Co. Inc.

(269) **Sun Refining and Marketing Co., Marcus Hook Wharf Nos. 2 and 2C** (39°48'30"N., 75°24'56"W.): wharf face 90 feet long, 650 feet of berthing space; 38 feet alongside; upper side 500 feet long, 440 feet of berthing space; 20 to 38 feet alongside; deck height, 15 feet; receipt and shipment of petroleum products, receipt of crude oil, shipment of petrochemicals, and bunkering vessels; owned and operated by Sun Refining and Marketing Co., a subsidiary of Sun Oil Co. Inc.

Delaware River (Commodore John Barry Bridge)
Image courtesy of Waterway Images (2006)

(270) **Sun Refining and Marketing Co., Marcus Hook Wharf, Nos. 1 and 1C** (39°48'35"N., 75°24'47"W.): wharf face 80 feet long, 600 feet of berthing space; 20 feet alongside; lower side 500 feet long, 470 feet of berthing space, 20 feet alongside; upper side 470 feet long, 20 feet alongside; deck height, 15 feet; receipt and shipment of petroleum products, and bunkering vessels, receipt of crude oil; owned and operated by Sun Refining and Marketing Co., a subsidiary of Sun Oil Co. Inc. and Hays Tug and Launch Service Inc.

(271) **Tosco Refining Co., Marcus Hook Wharf, Dock Nos. 1 and 2** (39°48'47"N., 75°24'27"W.): offshore wharf, upper and lower sections connected by a steel catwalk provide 1,400 feet of berthing space with dolphins, 40 feet alongside; deck height, 10.5 feet; storage capacity 3.5 million barrels; receipt and shipment of petroleum products, receipt of crude oil; owned and operated by Tosco Refining Co.

(272) **Tosco Refining Co., Marcus Hook Barge Wharf** (39°48'50"N., 75°24'18"W.): 500-foot face, 34 feet alongside; rear of face 480 feet, 20 feet alongside; deck height, 14 feet; receipt and shipment of petroleum products, receipt of crude oil; owned and operated by Tosco Refining Co.

(273) **Raccoon Creek**, Mile 70S, is the approach to the towns of Bridgeport and Swedesboro. The creek carries some traffic in fertilizer and fertilizer materials. The approach to Raccoon Creek is a dredged channel that extends west-southwestward through the shallow flats for 1.1 miles from the mouth.

(274) The approach channel is marked by buoys, and a lighted buoy marks the outer end of the rock jetty on the south side of the entrance.

(275) The U.S. Route 130 highway bridge at **Bridgeport,** 1.5 miles above the mouth, has a vertical-lift span with clearance of 4 feet down and 64 feet up. The ConRail bridge, 0.3 mile above the highway bridge, has a swing span with a width of 38 feet and a clearance of 7 feet. (See **117.1 through 117.59 and 117.741,** chapter 2, for drawbridge regulations.) Gasoline and minor repairs are available at a small marina on the north bank 1 mile below the highway bridge.

(276) Between Bridgeport and **Swedesboro,** 7.1 miles above the mouth, the least bridge clearances are: swing bridge, 50 feet horizontal, 6 feet vertical; fixed bridges, 33 feet horizontal, 8 feet vertical. Overhead power cables crossing the creek between the mouth and Swedesboro have a least clearance of 64 feet.

(277) An overhead power cable across Delaware River at Mile 70.5, near the northeast end of Marcus Hook Range, has a clearance of 210 feet.

(278) The **Commodore John Barry Bridge,** a fixed highway bridge with a clearance of 181 feet for a width of 1,600 feet over the main channel and 190 feet at the center, crosses the Delaware River between Chester and Bridgeport at Mile 71.

(279) **Chester**, Mile 72N, is an important manufacturing center, and many of its industries use the wharf facilities along the 3-mile waterfront. The nearest designated anchorage is off Marcus Hook.

Quarantine, customs, immigration, and agricultural quarantine

(280) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(281) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(282) Chester is a **customs port of entry.**

(283) Waterborne traffic to the wharves and piers in Chester consists mainly of barge traffic and light-draft vessels. The wharves have depths of 15 to 20 feet alongside; and some have as little as 5 feet. There are storage facilities and mechanical transfer equipment, and most have rail and highway connections. Water is piped to most facilities.

(284) **Chester Creek** empties into Delaware River about at the midpoint of the city waterfront. The railroad bridge just above the mouth has a swing span with a clearance of 1.5 feet. (See **117.1 through 117.59 and 117.901,** chapter 2, for drawbridge regulations.)

(285) Above that point, navigation is restricted by the 6-foot minimum clearance of the fixed bridges. Navigation is suitable only for very shallow-draft boats to the second bridge, about 0.2 mile above the entrance.

Currents

(286) The current velocity is 1.7 knots on the flood and 2.2 knots on the ebb off **Eddystone,** Mile 73N.

(287) **Darby Creek**, Mile 74N, was reported to be shoaled to an unknown extent in the entrance in 1980. The railroad bridges, 0.3 mile above the mouth, have bascule spans with minimum clearances of 3 feet. (See **117.1 through 117.59 and 117.903,** chapter 2, for drawbridge regulations.) The fixed highway bridge just above the railroad bridges has a clearance of 22 feet. Another fixed highway bridge with a clearance of 22 feet is 0.6 mile above the mouth of Darby Creek. Parallel fixed highway bridges, 1.2 miles above the mouth, have a least clearance of 4 feet. Oil barges and small tankers go to the wharf with about 7 feet alongside just below the railroad bridges; above this point, the creek is used only by small pleasure craft. The overhead power cable, 3.7 miles above the mouth of the creek, has a clearance of 29 feet. Submerged piles, marked at the outer end by a 55-gallon drum, extend about 150 yards south-southeast from the west side of the entrance.

(288) **Essington**, Mile 75N, has several boatyards that can provide berths, fuel, and supplies. Major hull and minor engine repairs to small craft can be made. Maximum haul-out capacities; marine railways, 50 feet; mobile lifts, 20 tons. Between Essington and Delaware River main channel is marshy **Little Tinicum Island,** which is about 2 miles long. There is a dike along the north shore of the passage east and north of Little Tinicum Island. An unmarked channel parallel to and about 450 feet from the centerline of the dike has a controlling depth of about 5.5 feet; shoals are on both sides of the channel. Local vessels usually pass around the west end of the island where the controlling depth is about 9 feet.

Anchorages

(289) A **special anchorage** is between the Essington waterfront and Little Tinicum Island. (See **110.1** and **110.67,** chapter 2, for limits and regulations.) Depths are 9 to 20 feet in the anchorage. The current velocity is about 1.3 knots. In 1978, a piling was reported in the anchorage area, about 0.5 mile eastward of the entrance to Darby Creek.

(290) Gasoline, diesel fuel, water, ice, berths, and marine supplies are available along the Essington waterfront eastward of Darby Creek. Maximum haul-out capacities are: railway, 125 feet; lift, 15 tons.

(291) A railroad car-float bridge is on **Thompson Point** on the New Jersey side opposite the west end of Little Tinicum Island. Between Thompson Point and **Crab Point,** 0.5 mile to the eastward, are the large buildings of the E.I. duPont de Nemours and Co., Repauno Plant. The plant has two wharves which provide 1,440 feet of berthing space with depths of 3 to 35 feet reported alongside; deck height is 10 feet. There are water and electrical shore-power connections and rail and highway connections. It is used for receipt and shipment of sulfuric acid and anhydrous ammonia.

Anchorages

(292) A **general anchorage** is between Thompson Point and Crab Point, and the south side of the main channel. (See **110.1 and 110.157 (a)(9) and (b),** chapter 2, for limits and regulations.)

Currents

(293) The current velocity is about 2 knots a half-mile east of Crab Point.

(294) There are several large petroleum facilities at **Paulsboro,** Mile 77S. All have railroad and highway connections and freshwater, only the GATX Wharf has electrical shore-power connections.

(295) **Mobil Oil Corp., Paulsboro Refinery, Tug Wharf and Berths 1, 2A, 2, 2B, 3A, 3B, and 5** (39°50'46"N., 75°15'55"W.): on Bramell Point, at the west end of the Paulsboro waterfront; 2,389-foot marginal wharf providing 2,256 feet of berthing space; 34 feet alongside; deck height 12.5 feet; 6-million-barrel storage capacity; used for the receipt of crude oil, petroleum products, and sodium silicate, and shipment of bulk and packaged petroleum products, bunkering vessels; owned and operated by Mobil Oil Corp.

(296) **Mobile Oil Corp., Paulsboro Refinery Tanker Wharf** (39°50'44"N., 75°16'12"W.): face 115 feet, 775 feet of total berthing space; 40 feet alongside; deck height, 12.5 feet; receipt of petroleum products, crude

oil, bunkering of vessels; owned and operated by Mobil Oil Corp.

(297) **GATX Terminals Corp., Paulsboro Terminal Wharf** (39°51'00"N., 75°15'00"W.): offshore wharf which provides 900 feet of berthing space; 36 to 40 feet alongside; deck height, 13 feet; 1.6-million barrel storage capacity; receipt and shipment of petroleum products; owned and operated by GATX Terminals Corp.

(298) **Mantua Creek**, Mile 78S, passes on the east side of Paulsboro and meanders southeastward to the vicinity of **Mantua,** 7.6 miles above the mouth. There is waterborne traffic in chemicals and paper to the first bridge; above which the creek is used only by small boats.

(299) The Mantua Creek entrance jetties are marked by lights, and the entrance channel is marked by buoys. (See Local Notice to Mariners and latest editions of charts for controlling depths.)

(300) The ConRail bridge 1.3 miles above the mouth has a 32-foot-wide swing span with a clearance of 1 foot. State Route 44 highway bridge, 1.5 miles above the mouth, has a vertical-lift span with clearance of 5 feet down and 64 feet up. (See **117.1 through 117.59 and 117.729,** chapter 2, for drawbridge regulations.) Above this point, the fixed bridges and overhead cables have minimum clearances of 10 feet and 50 feet, respectively.

(301) The wharves below the first bridge on Mantua Creek have depths of 20 to 14 feet alongside.

Anchorages

(302) A **general anchorage** is on the southeasterly side of the main channel above the entrance to Mantua Creek. (See **110.1 and 110.157 (a) (10) and (b),** chapter 2, for limits and regulations.)

Currents

(303) The current velocity is about 2 knots in the channel opposite the anchorage.

(304) On the northeast side of the Delaware River at Mile 78N, there are two petroleum terminals both of which have railroad and highway connections and water.

(305) **Sun Refining and Marketing Co., Hog Island Wharf** (39°51'38"N., 75°14'19"W.) provides 2,754 feet of berthing space; 30 to 31 feet reported alongside; deck height, 16 feet; 2¾ million-barrel storage capacity; receipt of crude oil and methyl tertiary butyl; owned by the City of Philadelphia and operated by Sun Refining and Marketing Co., a subsidiary of Sun Oil Co. Inc.

(306) **Citgo Asphalt Refining Co., Paulsboro Terminal Main Wharf** (39°51'15"N., 75°13'42"W.): 40-foot face providing 1,000 feet of berthing space with mooring dolphins, 40 feet alongside; deck height, 10 feet; pipelines extend from wharf to six steel storage tanks with a capacity of 1 1/3 million barrels; receipt of crude oil and shipment of asphalt; owned and operated by Citgo Asphalt Refining Co.

(307) **Sun Pipe Line Co., Fort Mifflin Terminal Wharf, Berth A** (39°52'08"N., 75°13'07"W.) **and Berth B** (39°52'13"N., 75°13'01"W.): 1,845 feet of berthing space; 37 to 40 feet alongside; deck height, 15 feet; 440,000-barrel storage capacity; receipt of petroleum products and crude oil; bunkering of vessels; owned and operated by Sun Pipe Line Co., a subsidiary of Sun Oil Co. Inc.

(308) Old **Fort Mifflin**, Mile 79.5N, is the site of the Corps of Engineers wharves, which have depths of 10 to 40 feet at their outer ends.

(309) **Woodbury Creek**, Mile 79.5S, is used only by small craft; local knowledge is needed. The approach must be made from the west-southwest because of the 2-foot shoal directly off the creek. At low water the channel within the creek is well defined. The highway bridge 0.8 mile above the mouth has a fixed span with a clearance of 15 feet. An overhead power cable close westward of the bridge has a clearance of 35 feet. Above this point, fixed bridges and overhead cables have a minimum clearance of 4 feet and 45 feet, respectively.

Chart 12313

(310) **Philadelphia**, one of the chief ports of the United States, is at the junction of Delaware and Schuylkill Rivers. The midharbor point along Delaware River is at Chestnut Street, Mile 86.5W.

(311) The Port of Philadelphia, as defined for Customs purposes, comprises such waters of the Delaware and Schuylkill Rivers bordering on the municipality as are navigable; the municipal limits on Delaware River extend from Fort Mifflin on the south to Poquessing Creek on the north, a distance of about 20 miles.

(312) Large quantities of general cargo are handled at the port in both foreign and domestic trade. In addition, crude petroleum and petroleum products, sugar, and ore are imported, while coal, grain, and refined petroleum products are exported. Coastwise receipts are mostly crude petroleum and petroleum products, and shipments consist chiefly of refined petroleum products.

Channels

(313) A Federal project provides for a channel 40 feet deep from the sea through the main channel in Delaware Bay and River to the Philadelphia Naval Shipyard, Mile 81; thence 40 feet on the west side and 37 feet on the east side through Philadelphia Harbor to Allegheny Avenue, Mile 89; thence 40 feet to the U.S. Steel basin opposite Newbold Island, Mile 110; and thence dredging depths of 25 feet to the Trenton Marine Terminal, Mile 115. (See Notice to Mariners and the latest editions of the charts for controlling depths.)

(314) **Note.**–In the Philadelphia-Trenton section of the river, masters are especially requested to limit speed of their vessels when passing wharves and piers so as to avoid damage by suction or wave wash to property or persons.

Anchorages

(315) General and naval anchorages are at Philadelphia. (See **110.1 and 110.157,** chapter 2, for limits and regulations.)

Bridges

(316) **Walt Whitman Bridge**, Mile 84, a highway suspension bridge connecting Philadelphia with Gloucester City, has a clearance of 150 feet at the center of the main span, and minimum clearance of 139 feet under the full width of the main span. **Benjamin Franklin Bridge,** Mile 86.8, 0.3 mile above Chestnut Street, has a suspension span with a clearance of 135 feet for the middle 800 feet of the span and 128 feet under the rest of the span. However, Benjamin Franklin Bridge has movable maintenance walkways, when in use, the vertical clearances are reduced to 121 feet under the middle 800 feet of the span and 114 feet under the rest of the river channel span.

Towage

(317) A large fleet of tugs up to 3,300 hp is available at Philadelphia, day and night, for any type service required. As a general rule, tugs are not required for vessels moving between Philadelphia and the sea; most vessels traverse this distance under their own power.

Weather

(318) The proximity of Philadelphia to Delaware Bay probably has some effects on temperature conditions locally. Periods of extended cold weather are relatively rare, with below zero readings reported only 24 times since official records began. Sustained periods of very high or low temperatures seldom last more than 3 or 4 days as conditions change fairly rapidly. Due to the prevalence of maritime air during the summer months, the humidity adds to the discomfort of the high temperatures. Fog can be expected during the autumn and winter.

(319) The average annual temperature at Philadelphia is 55.1°F (12.8°C). The average annual extremes are 63.9°F (17.7°C) and 45.7°F (7.6°C). July is the warmest month with an average temperature of 77.4°F (25.2°C) while January is the coldest month with an average temperature of 32.1°F (0°C). The warmest temperature on record is 104°F (40°C) recorded in July 1966 and the coldest temperature on record is -7°F (-21.7°C), last recorded in January 1984. Each month, June through September has recorded temperatures at or above 100°F (37.8°C) while each month, October through May has recorded temperatures below freezing (0°C).

(320) Precipitation is fairly evenly distributed throughout the year with maximum amounts during mid-summer. Much of the summer rainfall is in connection with local thunderstorms. July is the wettest month averaging 4.77 inches (121 mm) and October is the driest

month averaging 2.69 inches (68 mmm). The greatest 24-hour rainfall occurred in August 1971; 4.77 inches (121 mm). The average annual snowfall for Philadelphia is 20.7 inches (526 mm) and snow has fallen in each month, October through May. Single snow storms of 10 inches (254 mm) or more occur about every 5 years. The greatest 24-hour snowfall occurred in February 1983; 21.1 inches (536 mm).

(321) The prevailing wind direction for the summer is from the southwest, while northwesterly winds prevail during the winter. The annual prevailing direction is from the west-southwest. Destructive velocities are comparatively rare and occur mostly in gusts during summer thunderstorms. High winds in the winter, as a rule, come with the advance of cold air after the passage of a deep low-pressure area. Only rarely have hurricanes in the vicinity caused widespread damage, then primarily through flooding. Since 1950, seven storms have come within 57.8 miles (93 km) of Philadelphia, all from the south or southwest.

(322) Flood stages in the Schuylkill River normally occur about twice a year. Flood stages seldom last over 12 hours and usually occur after excessive falls of precipitation during summer thunderstorms. Flood stages in the Delaware River are caused by abnormally high tides due to the water "backing up" under the influence of strong south or southeast winds.

(323) The office of the National Weather Service is at the Philadelphia International Airport at the southwestern end of the city. **Barometers** may be compared there or checked by telephone. (See Appendix B for **Philadelphia climatological table**.)

Quarantine, customs, immigration, and agricultural quarantine

(324) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(325) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) Vessels subject to boarding for quarantine inspection are required to anchor off Marcus Hook boarding station. (See **110.1 and 110.157 (a) (8), and (b),** chapter 2, for quarantine anchorage regulations and limits.)

(326) Philadelphia is a **customs port of entry.**

Coast Guard

(327) A **Marine Safety Office** is in Philadelphia. (See appendix for address.)

Harbor regulations

(328) Local rules and regulations are enforced by the Navigation Commission for the Delaware River (Pennsylvania). The authority of the Commission extends from the Pennsylvania-Delaware boundary line on the south to the head of the navigable waters of Delaware River on the north. Copies of the regulations may be obtained from the Navigation Commission for the Delaware River (Pennsylvania), 1400 W. Spring Garden Street, Philadelphia, PA 19130.

Wharves

(329) Philadelphia has more than 45 deep-water piers and wharves along its Delaware River waterfront and along Schuylkill River. Most of the piers and wharves have highway and railroad connections. The port is served by multiple rail lines. Each of these carriers connect with tracks of the Philadelphia Belt Line Railroad which extends along the main part of the port's Delaware River waterfront. Freshwater is piped to most piers and wharves; electrical shore-power connections, if available, are mentioned under the particular facility.

(330) The Schuylkill River wharves and piers are mostly used to handle bulk petroleum products. Most of the general cargo piers and wharves are between the Walt Whitman Bridge and Port Richmond, 2 miles above the Benjamin Franklin Bridge, and at Ten Mile Point, 7 miles above the Benjamin Franklin Bridge.

(331) Coal, fertilizer, and ore are handled at the facilities south of Greenwich Point, just below the Walt Whitman Bridge.

(332) Cargo is generally handled by ships' tackle; special handling equipment, if available, is mentioned in the description of the particular facility. A barge crane with an 800-ton capacity is available by special arrangement; a 375-ton crane is also available.

(333) The alongside depths for each facility are reported. (For information on the latest depths contact the Port of Philadelphia or the private operator.) Only the major deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 8, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

Facilities in Schuylkill River, East Bank:

(334) **Creedon Tug and Barge Works, Girard Point, Pier No. 1** (39°53'38"N., 75°11'49"W.): upper side 1,092 feet long; 31 feet alongside; deck height, 11 feet; two 35-ton gantry cranes; 3 acres of open storage; mooring barges for cleaning, and vessels for repair; owned by Harry Hays Tug and Towing Service Inc. and operated by Creedon Tug and Barge Works and Creedon's Terminal.

(335) **Sun Refining and Marketing Co., Philadelphia Refinery, Girard Point Plant, Wharves 1, 2 and 3**: about 0.2 mile above Interstate 95 bridge; 2,075 feet of berthing space; 32 feet alongside; deck height, 12 feet; pipelines extend from wharf to steel storage tanks with a capacity of 1.6 million barrels; receipt and shipment of petroleum products, cumene, and benzene; owned and operated by Sun Refining and Marketing Co., a subsidiary of Sun Oil Co. Inc.

Facilities in Schuylkill River, West Bank:

(336) **Louis Dreyfus Energy, North America, Philadelphia Wharf** (39°55'38"N., 75°12'46"W.): 206-foot face; 16 feet alongside; deck height, 9 feet; pipelines extend

from wharf to steel storage tanks with a capacity of 850,000 barrels; receipt and shipment of petroleum products; owned and operated by Louis Dreyfus Energy, North America.

(337) **C.R. Wamer, Yankee Point Terminal Mooring** 39°54'41"N., 75°12'37"W.): 195-foot face; 24 to 26 feet alongside, deck height, 6 feet; pipelines extend from barge to steel storage tanks with a capacity of 135,000 barrels; receipt and occasional shipment of petroleum products; owned and operated by C.R. Wamer Inc.

(338) **Maritank Philadelphia Wharf** (39°54'36"N., 75°12'58"W.): 750-foot face; 33 feet alongside; deck height, 12 feet; pipelines extend from berth to steel storage tanks with a capacity of 947,300 barrels; receipt and shipment of petroleum products; owned and operated by Maritank Philadelphia Inc.

Facilities in Delaware River, south of Benjamin Franklin Bridge (39°57'10"N., 75°08'07"W.):

(339) **Greenwich Ore Pier 122S, South Wharves** (39°53'47"N., 75°08'16"W.): south side 850 feet long, 40 feet alongside; north side 850 feet long, 20 feet alongside; deck height, 12 feet; four cranes, unloading rate 1,200 tons per hour; electric conveyor and hopper system; 2-million-ton iron ore open storage; receipt of ore; owned by ConRail and operated by Pennsylvania Tidewater Dock Co.

(340) **Packer Ave. Marine Terminal Wharf** (39°54'08"N., 75°08'03"W.): 3,101-foot face with 3,150 feet of berthing space; 40 feet alongside; deck height, 13 feet; 100,000 square feet heated covered storage and 90,000 square feet covered cold-storage; one 375-ton crane; lift capacity; forklift trucks; receipt and shipment of conventional, containerized and roll-on/roll-off general cargo including fruit and steel; electrical shore-power connections; owned by Philadelphia Regional Port Authority and operated by Holt Cargo Systems Inc.

(341) **Pier 96S, South Wharves** (39°54'45"N., 75°07'56"W.): south side 1,320 feet long, north side 1,220 feet long, 30 feet alongside; deck height, 14 feet; 3 acres open storage; electric and water connections; receipt and shipment of automobiles; owned by Philadelphia Regional Port Authority and operated by Pasha Auto Warehousing and Pasha Terminal Co.

(342) **Pier 82S, South Wharves** (39°55'03"N., 75°08'03"W.): 45-foot face; deck height 11.7 feet; south side 852 feet long, deck height, 7.7 feet; north side 1,155 feet long, deck height, 11.7 feet; 30 feet alongside; 75,000 square feet covered storage; receipt of fruit, vegetables, and other perishable commodities; shipment of paper products; owned by Philadelphia Regional Port Authority and operated by Horizon Stevedoring.

(343) **Pier 80S, South Wharve**s (39°55'10"N., 75°08'12"W.): 358-foot face; south side 1,150 feet long; north side 1,063 feet long; 30 feet alongside; deck height, 11 feet; 254,024 square feet covered storage; 3 acres open storage; electric and water connections; receipt and shipment of newsprint, coated paper, wood pulp, lumber, and other forest products; owned by Philadelphia Regional Port Authority and operated by Penn Warehousing and Distribution Services Inc., and J.H. Stevedoring.

Facilities at Port Richmond:

(344) **Tioga II Marine Terminal Wharf** (39°58'37"N., 75°05'40"W.): 736-foot face, 28 feet alongside; southwest side 626 feet long, (depth alongside unknown); northeast side 620 feet long, 32 feet alongside; deck height, 10.6 feet; two 1.5-ton electric cranes; electric and water connections; 130,000 square feet covered storage; 10 acres of open storage; pipelines extend from wharf to steel storage tanks with 1.2-million-barrel capacity; receipt and shipment of petroleum products, petrochemicals, and miscellaneous bulk liquids; owned by Philadelphia Regional Port Authority and operated by GATX Terminals Corp.

(345) **Tioga I Fruit Terminal Wharf** (39°58'42"N., 75°05'10"W.): 1,753-foot face, 670-foot lower side with roll-on/roll-off berth; 40 feet alongside; deck height, 12 feet; 397,500 square feet covered storage; forklift trucks to 10 tons, container lift trucks to 35 tons, one top-lift container truck to 40 tons; receipt and shipment of conventional, containerized, and roll-on/roll-off general cargo including fruit; owned and operated by Philadelphia Regional Port Authority.

Supplies

(346) All types of marine supplies and services are available in the Philadelphia area. Bunker oil and diesel oil can be obtained at terminals along the Schuylkill River. Other bunkering terminals are at Marcus Hook, Paulsboro, and Eagle Point. Most larger vessels receive fuel from barges alongside.

Repairs

(347) There are several shore-based firms engaged in the field of general ship repairs; work is done on the vessel or in the company shops. Repairs to small vessels can be made at shipyards on Cooper Point in Camden. Small-craft repair facilities are at Dredge Harbor, NJ, and Essington, PA, described earlier in this chapter.

Communications

(348) Philadelphia is served by three major railroad systems. More than 100 steamship lines operate to and from the port. Several major airlines provide frequent scheduled service between Philadelphia International Airport, 5.5 miles southwest of City Hall, and domestic and overseas points.

(349) **Schuylkill River**, Mile 80N, is navigable for 7.3 miles to **Fairmount Dam** and is an important outlet for a part of the commerce of Philadelphia.

(350) The Federal project provides for a channel 33 feet deep to Passyunk Avenue bridge, 3.1 miles above the mouth, thence 26 feet deep to Gibson Point, 4 miles above the mouth, and thence 22 feet deep to University

Avenue bridge, 5.3 miles above the mouth. Above that point most of the wharves have depths of about 12 feet at their faces. (See Notice to Mariners and latest edition of the chart for controlling depths.)

(351) A light marks the outer end of a sunken jetty on the east side of the entrance to Schuylkill River and a sound signal is on the west side. A **021°30'** lighted range marks the entrance, and buoys mark the channel within the river as far as the railroad bridge, 4.5 miles above the mouth.

(352) Within its project limits, Schuylkill River is crossed by six bridges; the first two, Interstate 95 at Girard Point and the George C. Platt Memorial highway (Penrose Avenue) bridges, 0.6 mile and 1.3 miles, respectively, above the mouth, have fixed spans with clearances of 135 feet. The fixed highway bridge about 4.8 miles above the entrance has a clearance of 50 feet. The others, all drawbridges, have a minimum clearance of 15 feet. (See **117.1 through 117.59 and 117.905,** chapter 2, for drawbridge regulations.) The bridgetender of the railroad swing bridge, 4.3 miles above the mouth, monitors VHF–FM channel 13; call sign KXS–238.

(353) Above the University Avenue bridge, the limiting clearance of the fixed bridges is 16 feet. The railroad bridge, 5.6 miles above the mouth, has a swing span with a clearance of 26 feet. (See **117.1 through 117.59 and 117.905,** chapter 2, for drawbridge regulations.)

(354) The Passyunk Avenue bridge, 3.5 miles above the entrance has a bascule span with a clearance of 50 feet. (See **117.1 through 117.59 and 117.905(b)**, chapter 2, for drawbridge regulations.)

(355) The overhead cables above the University Avenue bridge have a minimum clearance of 70 feet.

Currents

(356) In Schuylkill River, the current velocity is about 0.5 knot at the entrance.

(357) The confluence of Schuylkill and Delaware Rivers is the center of the petroleum industry in the city of Philadelphia. The deep-draft piers and wharves along the river were described previously in this chapter under Wharves. Most of the other wharves and piers along the river have depths of 9 to 12 feet at their faces.

(358) **League Island**, now a part of the mainland at the junction of Delaware and Schuylkill Rivers, is the site of the **Philadelphia Naval Shipyard.** The reservation has a frontage of 0.6 mile on the east side of Schuylkill River and 2 miles on the north side of Delaware River. **Reserve Basin,** in the northwest part of the reservation, is used to store vessels of the reserve fleet.

(359) **Coastal Eagle Point Oil Co., Berths 1A, 2, and 3** (centered at 39°52'43"N., 75°09'20"W.), east of **Eagle Point,** Mile 81.8S: offshore wharves with up to 1,937 feet of berthing space; 32 to 40 feet alongside; deck height, 16 feet; railroad and highway connections; receipt of crude oil; receipt and shipment of petroleum products; bunkering of vessels; pipelines extending from wharves to storage tanks with a capacity of 8.6-million barrels; owned and operated by Coastal Eagle Point Oil Co.

(360) **Big Timber Creek**, Mile 82.9S (see also chart 12312), has an authorized entrance channel, which is no longer maintained. Local knowledge is needed to navigate the channel beyond the buoys. The minimum clearance of the fixed bridges at **Westville,** about 1 mile above the mouth, is 14 feet. Above Westville, the fixed bridges have a least vertical clearance of 8 feet. The overhead cables crossing the creek have a least clearance of 30 feet.

(361) The oil and chemical barge wharves on the northeast side of the entrance to Big Timber Creek have depths of about 12 feet at their faces. Above here, the creek is little used except by pleasure craft. Several marinas are along the creek; slips, gasoline, and some marine supplies are available. Hull and engine repairs can be made. Maximum haul-out capacities: railway, 48 feet; lift, 10 tons.

(362) **Gloucester City**, Mile 83.5, is the site of large manufacturing plants. The three deep-draft facilities along the waterfront, which are described below, have railroad and highway connections.

(363) **Koch Refining Co., Gloucester City Wharf** (39°53'41"N., 75°07'51"W.), about 0.7 mile below Walt Whitman Bridge: 50-foot face with 850 feet of berthing space; 35 feet alongside; deck height, 12 feet; pipelines from wharf to storage tanks with 800,400-barrel capacity; receipt and shipment of petroleum products; owned and operated by Koch Refining Co. L.P.

(364) **Holt Hauling and Warehousing Systems, Gloucester City Marine Terminal, Berths 9 and 9A** (39°54'04"N., 75°07'42"W.), about 1,000 feet south of Walt Whitman Bridge provide 1,530 feet of berthing space with 35 to 45 feet alongside; deck height, 12 feet; 125,000 square feet covered dry and refrigerated storage; 40 acres open storage; receipt and shipment of containerized general cargo; owned by Holt Cargo Systems Inc. and operated by Holt Hauling and Warehousing Systems Inc., Gloucester City Refrigerated Warehousing, and Gloucester City Terminals.

(365) **Holt Hauling and Warehousing Systems, Gloucester City Marine Terminal, Berth North 8A** (39°54'16"N., 75°07'38"W.), about 500 feet south of Walt Whitman Bridge provides 610 feet of berthing space with 40 feet alongside; deck height, 12 feet; 101,000 square feet covered dry storage and 20,000 square feet covered refrigerated storage; 40 acres open storage; receipt and shipment of conventional general cargo; owned by Holt Cargo Systems Inc. and operated by Holt Hauling and Warehousing Systems Inc., Gloucester City Refrigerated Warehousing, and Gloucester City Terminals.

(366) **Holt Cargo Systems, Pier 7**, is about 300 yards north of Walt Whitman Bridge on the south side of Newton Creek; 2,130 feet of berthing space with 24 to 40 feet alongside; deck height, 12 feet; two 150-ton cranes and forklift trucks with lifting capacity to 25 tons; about 250,000 square feet of covered storage and about 90

acres of open storage; receipt and shipment of general cargo; owned and operated by Holt Cargo Systems, Inc.

(367) The current velocity is about 2.1 knots off Gloucester City.

(368) **Newton Creek**, Mile 84.2E, forms the boundary between Gloucester City and Camden. Navigation is blocked 500 yards above the mouth by low fixed bridges.

(369) **Camden**, NJ, is an important manufacturing center directly opposite Philadelphia, with which its industrial and shipping activities are closely allied. The South Jersey Port Corporation, with headquarters at Camden, has jurisdiction over the New Jersey ports bordering Delaware River and Bay from Trenton to the ocean.

Quarantine, customs, immigration, and agricultural quarantine

(370) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(371) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

Wharves

(372) The Camden city waterfront extends about 3.4 miles from Newton Creek to Cooper River; also included are the petroleum terminals at Pettys Island and Fisher Point Dike. All of the wharves have highway and some have railroad connections. Camden is served by ConRail. Beckett Street and Broadway Terminals have fresh water and electrical shore-power connections. MAFCO Worldwide Corp. Pier has water connections.

(373) Cargo is generally handled by ships' tackle; special handling equipment, if available, is mentioned in the description of the particular facility. An 800-ton floating crane is available at Philadelphia by special arrangement; a 375-ton heavy lift crane is also available at Philadelphia.

(374) The alongside depths for each facility are reported. (For information on the latest depths contact the South Jersey Port Corp. or the private operator.) Only the major deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 8, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

(375) **Broadway Terminal, Berth No. 5** (39°54'31"N., 75°07'24"W.): 1,100-foot face; 35 feet alongside; deck height, 12 feet; 129,000 square feet of covered storage; 30 acres of open storage; one 80-ton crane; receipt and shipment of conventional and containerized general cargo including fruit; owned by South Jersey Port Corp., and operated by Del Monte Fresh Food Inc.

(376) **Broadway Terminal, Pier No. 2** (39°54'54"N., 75°07'29"W.): 62-foot face, 1,005-foot lower side, 809-foot upper side; 35 feet alongside; deck height, 10 to 12 feet; vessel mooring and repair; owned by South Jersey Port Corp. and operated by South Jersey Port Corp. and McAllister Brothers, Inc.

(377) **Broadway Terminal, Berths 1 and 1A** (39°54'56"N., 75°07'32"W.): 443-foot face (Berth 1A), 35 feet alongside; south side (Berth 1), 856 feet long, 35 to 40 feet alongside; deck height, 11 feet; 59,600 square feet covered storage; 22 acres of open storage; one 40-ton gantry crane; receipt and shipment of conventional general cargo, coal, and petroleum coke; owned and operated by South Jersey Port Corp.

(378) **MAFCO Worldwide Corp. Pier** (39°55'09"N., 75°07'38"W.): 252-foot face, 30 feet alongside; south side, 427 feet long, 22 to 30 feet alongside; north side, 388 feet long; deck height, 12 feet; receipt of fuel oil for plant consumption; owned and operated by MAFCO Worldwide Corp.

(379) **GP Gypsum Corp. Wharf** (39°55'51"N., 75°07'57"W.): offshore wharf, 410 feet long, 30 feet alongside; deck height, 11 feet; open storage for 200,000 tons of gypsum rock; receipt of gypsum rock; owned and operated by GP Gypsum Corp.

(380) **Beckett Street Terminal Wharf** (39°56'13"N., 75°07'55"W.): 2,655-foot face, 40 feet alongside; deck height, 11 feet; 149,930 square feet of covered storage; 15 acres of open storage; cranes to 85 tons, and forklift trucks are available; receipt and shipment of general and containerized cargo and steel; receipt of lumber, ores, coal, salt, and dry bulk commodities; shipment of scrap metal; owned and operated by South Jersey Port Corporation.

(381) **Citgo Petroleum Corp., Petty's Island Terminal Dock** (39°58'14"N., 75°05'58"W.): 800 feet of berthing space; 26 feet alongside; deck height, 11 feet; 1-million barrel storage capacity for petroleum products; 165,000-barrel storage capacity for asphalt; receipt and shipment of petroleum products; receipt of asphalt; owned by Citgo Petroleum Corp., and operated by Citgo Petroleum Corp. and Koch Oil Inc.

(382) **Amerada Hess Corp., Pennsauken Dock 1 and Lower Dock** (39°58'43"N., 75°04'09"W.): 285 to 300 feet of berthing space; 39 to 40 feet alongside; deck heights, 12 to 13.5 feet; 2.3-million barrel storage capacity; receipt and shipment of petroleum products; owned and operated by Amerada Hess Corp.

(383) There are no major repair facilities at Camden for large vessels.

(384) A ferry operates across Delaware River from Penns Landing to the Camden waterfront.

(385) There are several shipyards at **Cooper Point,** above the Benjamin Franklin Bridge, that can make all kinds of above and below water repairs to small vessels. The largest floating drydock has a capacity of 850 tons, 182 feet long and 66.5 feet wide, and has a depth of 12 feet over the keel blocks. The largest marine railway has a haul-out capacity of 750 tons.

(386) **Back Channel** between **Petty Island** and the New Jersey shore has a controlling depth of about 10 feet; both entrances are buoyed, but care is necessary to avoid the foul ground extending from both shores. The railroad-highway bridge over the northeastern end of

Back Channel has a fixed span with a clearance of 15 feet. Most of the boatyards along the New Jersey shore southward of Petty Island are inactive.

(387) **Cooper River** empties into the south side of Back Channel, 0.6 mile above the southwest entrance. In 1980, the centerline controlling depth was 6 feet to the end of the dredged channel. The channel through the flats at the entrance is buoyed. The drawbridges over this section of the river have a minimum width of 20 feet and a clearance of 3 feet. (See **117.1 through 117.59 and 117.713**, chapter 2, for drawbridge regulations.) The petroleum wharf near the railroad bridge has a reported depth of 5 feet at its face.

Chart 12314

(388) Above Philadelphia, the 40-foot dredged channel continues to Newbold Island, Mile 110, thence the project depths are 25 feet to the Trenton Marine Terminal and 12 feet to the railroad bridge at Trenton. Depths above Newbold Island may be considerably below project depths. (See Notice to Mariners and latest edition of chart for controlling depths.)

Ice

(389) Above Philadelphia the river usually is closed by ice for extended periods during January and February, and in severe winters navigation is practically suspended during these months; ice seldom forms before January.

(390) During March and April, **freshets** 10 to 20 feet in height above mean low water may be expected at Trenton. The highest level is reached during the ice breakup in the spring; heavy rains do not ordinarily raise the level to more than 9 feet above mean low water. Freshets usually are not dangerous to shipping unless accompanied by ice. The 1903 freshet, highest on record, reached heights above low water of 21.5 feet at Trenton, 19.5 feet at Bordentown, and 13 feet at Bristol.

(391) The Delair railroad bridge, which crosses Delaware River from Bridesburg, PA, to Delair, NJ, Mile 90.6, has a vertical-lift span with a clearance of 49 feet down and 135 feet up. (See **117.1 through 117.59 and 117.904,** chapter 2, for drawbridge regulations.) The bridgetender monitors VHF–FM channel 13; call sign KS–9970. An overhead power cable at the bridge has a clearance of 140 feet. The current velocity is 1.6 knots at the bridge.

(392) The Betsy Ross fixed highway bridge, with a clearance of 140 feet, crosses the Delaware River at Mile 90.8.

(393) The highway bridge that crosses Delaware River from Tacony, PA, to Palmyra, NJ, Mile 93.0, has a bascule span with a clearance of 50 feet. (See **117.1 through 117.59 and 117.904,** chapter 2, for drawbridge regulations.) The bridgetender monitors VHF–FM channel 13; call sign KBA–328.

(394) Gasoline and some supplies are available at a small boatyard on the west side of the bridge at Tacony; minor engine repairs can be made.

(395) **Dredge Harbor**, Mile 96S, is a base for sand and gravel dredging equipment and yachts. The eastern entrance is closed by shoals. The western entrance has depths of about 10 feet, thence up to 15 feet inside. The sand and gravel wharves on the northeast side of the harbor have depths of 8 to 10 feet at their outer ends. Berths, gasoline, diesel fuel, and marine supplies are available at several marinas in the harbor. Hull and engine repairs can be made. Maximum haul-out capacity: lift, 30 tons.

(396) **Rancocas Creek**, Mile 96S, has some sand and gravel barge traffic as far as the first bridge; above this point the creek is used only by pleasure boats. Depths are about 5 feet to **Centerton** 6 miles above the mouth. The channel is narrow and crooked above Bridgeboro and in general follows ebb-tide bends back and forth between shoals; navigation is difficult without local knowledge. The entrance to the creek is marked by a buoy. The current velocity is about 1 knot in the entrance.

Small-craft facilities

(397) There are small-craft facilities near the first bridge and at **Bridgeboro.** Berths, gasoline, and marine supplies are available. A small-craft facility at Bridgeboro can make hull and engine repairs to trailerable craft.

(398) County Route 543 highway bridge, 1.3 miles above the mouth, has a swing span with a clearance of 4 feet. The railroad bridge, about 0.2 mile above the highway bridge, has a fixed span with a clearance of 20 feet. U.S. Route 130 highway bridge at Bridgeboro, 2.6 miles above the mouth, has a fixed span with a clearance of 19 feet. The County Route 635 bridge at Centerton, 6 miles above the mouth, has a swing span with a width of 48 feet in the south opening and a clearance of 6 feet. (See **117.1 through 117.59 and 117.745,** chapter 2, for drawbridge regulations.) Above this point, navigation is limited by fixed bridges, the least clearance being 6 feet at the Mount Holly bridge, 11.5 miles above the mouth.

(399) **Poquessing Creek**, Mile 97N, forms the upper boundary of the city of Philadelphia. A yacht club at **Torresdale**, a part of the city on the lower side of the creek, has a float landing. In 1998, reported depths at the float were 9 to 12 feet.

(400) **Mud Island**, just above Poquessing Creek, is a flat which is partly submerged at high water and is covered with marsh grass in the summer. The channel between Mud Island and the Pennsylvania mainland has a controlling depth of about 7 feet. The lower part of the channel is used considerably as a small-boat anchorage.

(401) **Andalusia,** Mile 97.5N, is a suburban residential community with few industries along the waterfront. A yacht club at **Cornwells Heights,** 1 mile eastward of Andalusia, has a float landing with about 10 feet alongside; gasoline, berths, and water are available on weekends only.

(402) **Neshaminy Creek**, Mile 100N, has depths of about 7 feet to the fixed highway bridge 0.7 mile above the mouth, thence about 4 feet for another 0.3 mile to where

the creek has shoaled to bare. The fixed highway bridge has a clearance of 9 feet. There are several boatyards and marinas along the creek. Berths, gasoline, diesel fuel, water, and some marine supplies are available. Hull and engine repairs can be made. Maximum haul-out capacities: railway, 60 feet; lift, 20 tons.

(403) At Mile 100.1N, a dredged channel leads to a small-craft basin at **Neshaminy State Park.** Berths, ice, water, and electricity are available. In 1974, the controlling depth was 8 feet in the entrance channel and 4 feet in the basin. In 1978, shoaling was reported in the basin in about 40°04.6'N., 74°54.4'W. The mouth of the entrance channel is marked by a light.

(404) The power cable over Delaware River at Mile 101.7 has a clearance of 140 feet. The highway bridge between Burlington NJ and Bristol, PA, at Mile 102.1 has a vertical-lift span with clearances of 61 feet down and 133 feet up. (See **117.1 through 117.59 and 117.904**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF–FM channel 13; call sign KBA–339.

(405) **Burlington**, Mile 102.5S, fronts in part on the main channel of Delaware River and part on the auxiliary channel southeast of Burlington Island. Several industries are located at Burlington and its suburb, **East Burlington,** which is centered a mile along the auxiliary channel.

(406) The Delaware River main channel continues along the northwest side of Burlington Island, and the auxiliary channel extends along the southeast side for 1.2 miles to a turning basin. In 2001, the midchannel controlling depth in the auxiliary channel was 8.6 feet, thence depths in the basin range from 7.1 feet along the southeast side gradually shoaling to bare in the northeast half. Eastward of the turning basin, the back channel has natural depths of about 6 to 11 feet through the northeast entrance.

(407) The overhead power cable about 0.3 mile northeast of the turning basin has a clearance of 45 feet.

Currents

(408) The current velocity is 1.3 knots on the flood and 1.6 knots on the ebb in the main channel west of Burlington Island. In the back channel east of the island, the velocity is 0.9 knot on the flood and 1.8 knots on the ebb.

(409) The public utilities wharf at the lower end of Burlington has reported depths of 20 feet at the face; other wharves have depths ranging from 7 to 12 feet. The town wharf, about 0.4 mile east of Assiscunk Creek, has depths of 12 feet reported alongside. An oil wharf, above the turning basin, has depths of about 12 feet at the outer face. A marina at the entrance to **Assiscunk Creek** has berths, gasoline, diesel fuel, ice, and some marine supplies. A 7-ton mobile hoist is available for hauling out vessels for hull and engine repairs.

(410) **Bristol**, Mile 103.5N, was the terminus of the **Delaware and Lehigh Canal,** which was abandoned in 1931; the former Bristol entrance from the river is filled in. The public wharf at the lower end of the town has depths of about 3.5 feet reported at the face. A yacht club near the upper end of Bristol has float landings with 8 feet reported alongside; water is available; members or guests may use the club railway to haul out boats up to 38 feet, but must make their own repairs.

(411) At Mile 104.5S, Gold Bond Building Products operates a wharf which provides 420 feet of berthing space. Depths of 31 feet are reported alongside; deck height, 9 feet. There is an electrical shore power connection. There is a conveyor system for unloading gypsum rock. There are railroad and highway connections.

(412) The fixed highway bridge at Mile 105.1 has a clearance of 135 feet.

(413) At about Mile 105.9N, an oil company operates a wharf which has 875 feet of berthing space with dolphins. A depth of 37 feet is alongside; deck height, 15 feet. There are highway connections near the wharf. The facility is used for receipt of petroleum products.

(414) **Florence**, Mile 107W, is a manufacturing community with no waterborne commerce.

(415) **Newbold Island**, just above the Roebling main wharf, is 1.5 miles long, with a greatest width of 0.7 mile. The main channel of Delaware River is along the north side of Newbold Island.

(416) In 1982, a section of the back channel, S of Newbold Island, between the island and the New Jersey mainland was reported to have shoaled to bare.

(417) At Mile 109N is a basin where sand and gravel are handled. The wharves have depths of about 10 feet at their faces.

(418) **Fieldsboro**, Mile 110.5S, is a residential community with no waterborne commerce.

Currents

(419) The current velocity in Whitehill Range off Fieldsboro is 1.4 knots on the ebb; the flood current is weak and of short duration.

(420) **Crosswicks Creek**, Mile 111.1S, is used extensively by pleasure craft. Berths and gasoline can be obtained at one of the yacht clubs at Bordentown, near the mouth of the creek. A fixed highway bridge (I–295) crosses Crosswicks Creek at Mile 0.0 and has a clearance of 35 feet.

(421) **Bordentown**, on the high bank on the southeast side of the entrance to Crosswicks Creek, was the terminus of the **Delaware and Raritan Canal,** which was abandoned in 1933.

(422) Mariners are advised to stay in the dredged channel when navigating between Bordentown and Trenton, because of the rocky ledges and shoals bordering the channel.

(423) On **Duck Island,** Mile 113E, there are two oil-receiving piers with 16 feet reported alongside, and a public utility coal pier with 25 feet reported alongside. Vessels stay in the main channel until north of the coal pier before heading toward shore and southward to the oil terminals to avoid the shoal area between the main channel and the terminals.

Small-craft facilities

(424) On the New Jersey shore between Duck Island and Trenton are small-craft facilities where gasoline, berths, water, and some marine supplies are available. Minor hull and engine repairs can be made.

(425) A power cable with a clearance of 166 feet crosses the Delaware River at Mile 114.

(426) **Trenton**, the capital of New Jersey, is at the railroad bridge crossing the river at Mile 116. The railroad bridge is the head of powerboat navigation. The city is an important manufacturing center.

(427) Just below the railroad bridge, there is an oil-receiving wharf with depths of 10 to 15 feet alongside.

Weather

(428) Trenton is in a region about midway between the rigorous climates of the North and the mild climates of the South and located at on the Delaware River, upstream from Philadelphia.

(429) Rainfall distribution throughout the year is rather uniform with the spread between the wettest month (July) and the driest month (February) being only 1.82 inches (46.2 mm). The average annual precipitation for Trenton is 41.97 inches (1066 mm). The greatest 24-hour rainfall occurred in July 1975 when 5.75 inches (146 mm) fell.

(430) Snowfall occurs on about 20 days per year on the average; however, an average of only 6 days annually produce snowfalls greater than 1.5 inches (38.1 mm). The average annual snowfall is 24.7 inches (627.4 mm). February is the snowiest month but it is trailed closely by January. The greatest 24-hour snowfall occurred in February 1978 when 13.4 inches (340.4 mm) fell.

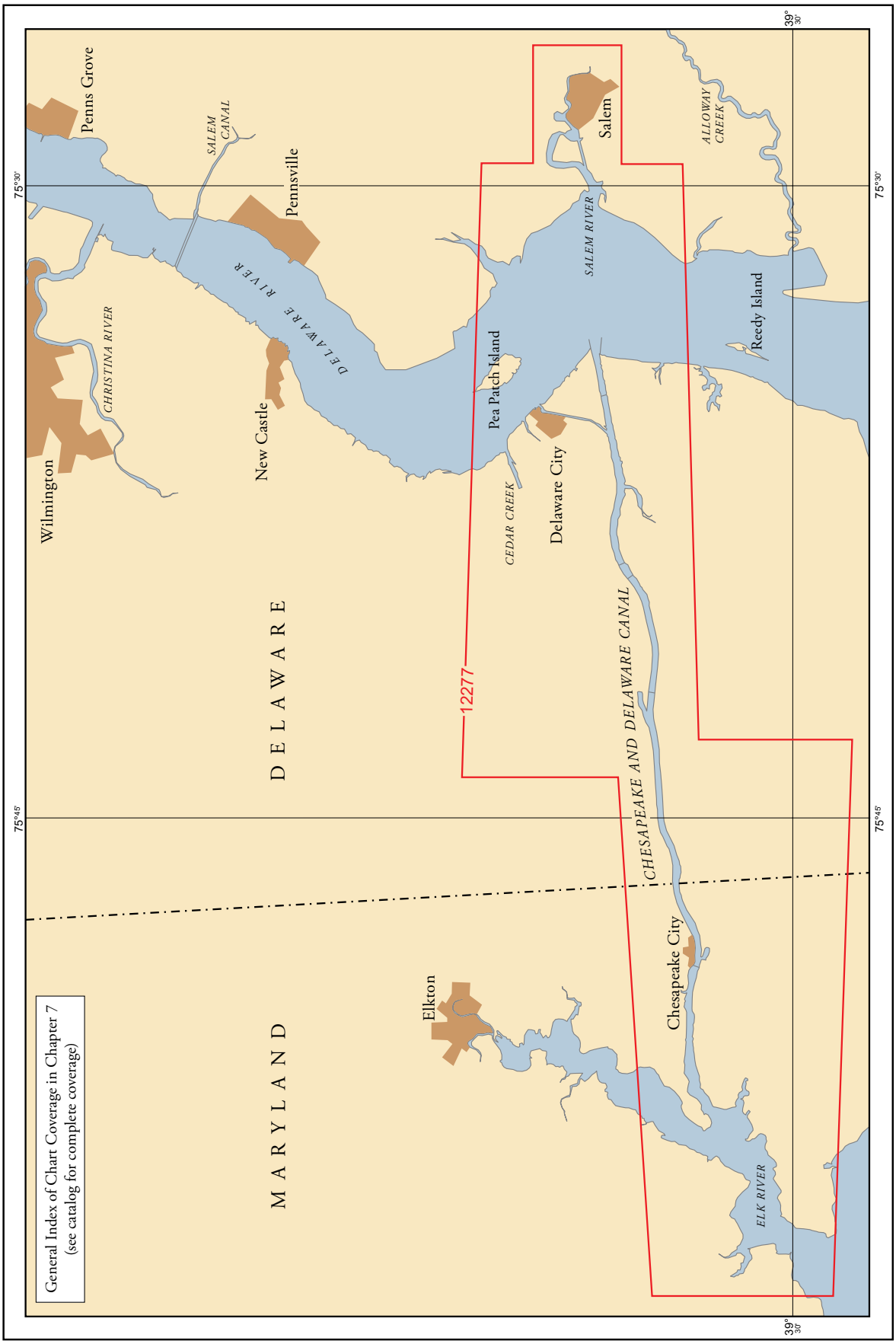
(431) In summer, the area is under the influence of the large semipermanent high-pressure system commonly known as the Bermuda High. Based on climatology, it is usually centered over the Atlantic Ocean near latitude 30°N. This high-pressure system brings a circulation of warm, humid air masses over the area from the deep South. The proximity of large water areas and the inflow of southerly winds contribute to high relative humidities much of the year.

(432) January is the coldest month, and July, the warmest. The average annual temperature at Trenton is 54.3°F (12.4°C) with an average high of 62.2°F (16.8°C) and an average low of 45.9°F (7.7°C). The warmest temperature on recorded at Trenton is 102°F (38.9°C) last recorded in July 1966. The coldest temperature on record is -4°F (-20°C) last record in January 1978. Each month, October through April, has recorded temperatures below freezing (0°C) while only July has seen temperatures in excess of 100°F (37.8°C).

(433) (See Appendix B for **Trenton climatological table.**)

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12214	Cape May Point, Delaware Bay	38º57'N/74º58'W	5.4	5.0	0.2
12216	Rehoboth Beach	38°43'N/75°05'W	4.4	4.1	0.2
12216	Breakwater Harbor	38°47'N/75°08'W	4.7	4.2	0.2
12304	Woodland Beach, Delaware Bay	39º20'N/75º28'W	6.4	6.1	0.2
12304	Murderkill River entrance, Delaware Bay	39º04'N/75º24'W	5.7	5.3	0.1
12311	Wilmington Marine Terminal, Christina River	39°43'N/75°31W	5.9	5.5	0.2
12311	New Castle, Delaware River	39°40'N/75°34W	5.8	5.4	0.2
12311	Reedy Point, Delaware River	39°34'N/75°34W	5.8	5.5	0.2
12312	Billingsport, Delaware River	39°51'N/75°15'W	6.2	5.8	0.2
12312	Philadelphia, Municipal Pier 11	39°57'N/75°08'W	6.8	6.4	0.2
12314	Bridgeboro, Rancocas Creek	40°02'N/74°56'W	6.9	6.5	0.2
12314	Burlington, Delaware River	40°05'N/74°53'W	7.8	7.5	0.2
12314	Trenton, Delaware River	40°11'N/74°45'W	8.7	8.4	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 November 2011


General Index of Chart Coverage in Chapter 7
(see catalog for complete coverage)
MARYLAND
DELAWARE
Elkton
Wilmington
CHRISTINA RIVER
New Castle
DELAWARE RIVER
Pennsville
SALEM CANAL
Penns Grove
Pea Patch Island
CEDAR CREEK
Delaware City
SALEM RIVER
Salem
ALLOWAY CREEK
Reedy Island
CHESAPEAKE AND DELAWARE CANAL
Chesapeake City
ELK RIVER
12277
75°30'
75°45'
39° 30'

Chesapeake and Delaware Canal

Chart 12277

(1) The **Chesapeake and Delaware Canal** is a sea-level waterway that extends from Delaware River at Reedy Point, DE, to **Back Creek** at Chesapeake City, MD, thence down Back Creek to Elk River and Chesapeake Bay. The Reedy Point entrance is 51 miles above the Delaware Capes, 35.5 miles below Philadelphia, 62 miles from Baltimore, and 187.5 miles from the Virginia Capes. **Miles** in the following text are the distances in nautical miles along the canal from the middle of Delaware River. **Reedy Point**, at Mile 0.7 on the north side of the Delaware entrance, is jettied and is marked by a light; the jetty on the south side is similarly marked.

(2) **Note**.–The system of marking the channel with buoys and lights is from each entrance and reverses at Chesapeake City. Even numbers and flashing red lights are on the north side and odd numbers and flashing green lights are on the south side between the Delaware Bay entrance and Chesapeake City. Even numbers and flashing red lights are on the south side and odd numbers and flashing green lights are on the north side from Chesapeake City to the west end of the canal. Each bend along the canal is marked by an amber light.

(3) In addition to the navigational aids, the north and south banks of the Chesapeake and Delaware Canal are lighted by mercury vapor luminaries spaced 500 feet apart on poles at a height of 25 feet mean high water. They are designed to illuminate the banks at the waters edge to assist ships navigating the canal at night. The U.S. Army Corps of Engineer maintained poles are 250 feet apart with a light on every other pole.

COLREGS Demarcation Lines

(4) The lines established for Delaware Bay and Chesapeake Bay are described in **80.503** and **80.510**, chapter 2.

Navigation regulations

(5) The following regulations are from 33 CFR 162 and 33 CFR 207:

§162.40 Inland waterway from Delaware River to Chesapeake Bay, DE and MD (Chesapeake and Delaware Canal).

(6) (a) Applicability. The regulations in this section are applicable to that part of the inland waterway from Delaware River to Chesapeake Bay, DE and MD, between Reedy Point, Delaware River, and Old Town Point Wharf, Elk River.

(7) (b) Speed. No vessel in the waterway shall be raced or crowded alongside another vessel. Vessels of all types, including pleasure craft, are required to travel at all times at a safe speed throughout the canal and its approaches so as to avoid damage by suction or wave wash to wharves, landings, riprap protection, or other boats, or injury to persons. Pilots and vessel operators transiting the canal and its approaches are warned that violation of this rule may result in having their privilege to transit the canal suspended. Passages of vessels through the canal will be monitored and specific cases will be investigated where damage by suction or wave wash does occur. Owners and operators of yachts, motorboats, rowboats, and other craft are cautioned that large deep-draft ocean-going vessels and other large commercial vessels ply the canal, and such owners and operators should be particularly careful to moor or anchor well away from the main ship channels, with moorings and lines which are sufficient and proper.

(8) (c) Right-of-way. All vessels proceeding with the current shall have the right-of-way over those proceeding against the current. Large vessels or tows must not overtake and attempt to pass other large vessels or tows in the waterway. All small pleasure craft shall relinquish the right-of-way to deeper draft vessels, which have a limited maneuvering ability due to their draft and size.

(9) (d) Stopping in waterway. Vessels will not be permitted to stop or anchor in the ship channel.

(10) (e) Water skiing. Water skiing in the waterway is prohibited between Reedy Point and Welch Point.

(11) (f) Sailboats. Transiting the canal by vessels under sail is not permitted between Reedy Point and Welch Point.

§ 207.100 Inland waterway from Delaware River to Chesapeake Bay, DE and MD (Chesapeake and Delaware Canal); use, administration, and navigation.

(12) (a) Applicability. The regulations in this section are applicable to that part of the inland waterway from Delaware River to Chesapeake Bay, DE and MD, between Reedy Point, Delaware River, and Old Town Point Wharf, Elk River.

(13) (b) Supervision. The District Engineer, Corps of Engineers, Philadelphia, PA, has administrative supervision over the waterway and is charged with the enforcement of these regulations. The District Engineer from time to time will prescribe rules governing the

dimensions of vessels which may transit the waterway, and other special conditions and requirements which will govern the movement of vessels using the waterway. The District Engineer's representative is the Chesapeake City Resident Engineer. The Chesapeake City Resident Engineer through the dispatcher on duty will enforce these regulations and monitor traffic through the canal.

(14) (c) Safe navigation required. Clearance for any vessel to enter or pass through any part of the waterway will be contingent on the vessel's having adequate personnel, machinery, and operative devices for safe navigation. In the event of question as to the ability of any vessel to navigate the waterway safely, a ruling will be made by the dispatcher. The owner, agent, master, pilot, or other person in charge of the vessel concerned may appeal the dispatcher's ruling to the District Engineer whose decision shall be final. A clearance by the dispatcher for a vessel's passage through the waterway shall not relieve the owners, agents, and operators of the vessel of full responsibility for its safe passage.

(15) (d) Radio equipment. Requirements for radio equipment on vessels transiting the waterway are as described in rules governing traffic through the waterway issued by the District Engineer. Vessels not having the mandatory radio equipment will not be permitted to transit the canal.

(16) (e) Anchorage and wharfage facilities. The anchorage basin at Chesapeake City and free wharfage facilities on the west side of the anchorage basin are available for small vessels only. These facilities are of limited capacity, and permission to occupy them for periods exceeding 24 hours must be obtained in advance from the dispatcher at Chesapeake City.

(17) (f) Projections from vessels. No vessel carrying a deck load which overhangs or projects beyond the sides of the vessel will be permitted to enter or pass through the waterway. Vessels carrying rods, poles, or other gear extending above the top of the vessel's mast will be required to lower such equipment to a level with the top of the mast before entering the waterway.

(18) (g) (Reserved)

(19) (h) Tows–(1) Integrated pusher-type tows. The maximum overall length and extreme breadth of this type of tow which may transit the canal are as described in rules governing traffic through the waterway issued by the District Engineer.

(20) (2) All other types of tows. All ships or tugs engaged in towing vessels not equipped with a rudder, whether light or loaded, shall use two towlines or a bridle on one towline. If the vessel in tow is equipped with a rudder, one towline without a bridle may be used. All towlines must be hauled as short as practicable for safe handling of the tows. No towboat will be permitted to enter the waterway with more than two loaded, or three light barges. Two or more barges or other vessels, not self-propelled, shall be towed abreast and not in tandem, using two towlines unless the towboat is made fast alongside the tow.

(21) (i) (Reserved)

(22) (j) Traffic lights. Traffic lights are located at Reedy Point and Old Town Point Wharf. These traffic lights are described in the rules governing traffic through the waterway issued by the District Engineer.

(23) (k) Drawbridges. Operation of the Penn Central vertical lift bridge across the canal will be in accordance with regulations promulgated by the U.S. Coast Guard. (See **117.1 through 117.59 and 117.235**, chapter 2, for drawbridge regulations.)

(24) (l) (Reserved)

(25) (m) Refuse and oil. The depositing of trash, refuse, debris, oil, or other material in the waterway or upon the banks or right-of-way is prohibited. Violators are subject to penalties as prescribed by Federal law.

(26) (n) Damage to waterway property. Damage to the waterway, lands, banks, bridges, jetties, piers, fences, buildings, trees, telephone lines, lighting structures, or any other property of the United States pertaining to the waterway is prohibited.

(27) (o) Fish and game. The fish and game laws of the United States and of the States of Delaware and Maryland, within their respective bounds, will be enforced upon the waters and lands pertaining to the waterway owned by the United States.

(28) (p) Grounded, wrecked, or damaged vessels. In the event a vessel is grounded or wrecked in the waterway or is damaged by accident or successive mechanical breakdown, the owner, agent, or operator shall take prompt action to prevent the vessel from becoming or remaining an obstruction to navigation, and such persons shall also respond to such instructions as may be issued by the District Engineer to prevent the vessel from becoming or remaining a menace to navigation. The lack of reasonable response from owner, agent, or operator may be deemed sufficient cause for the District Engineer to undertake repair or removal of the vessel as he may determine to be in the best interest to the Government.

(29) (q) (Reserved)

(30) (r) (Reserved)

(31) (s) (Reserved)

(32) (t) Pilotage. Any pilot who pilots in the canal shall comply with State laws or Coast Guard regulations and must be licensed for this waterway by the U.S. Coast Guard.

(33) (u) Vessels difficult to handle. Vessels which are observed by the pilot or master in charge, to be difficult to handle, or which are known to have handled badly on previous trips, must transit the canal during daylight hours and must have tug assistance. Such vessels must obtain permission from the dispatcher to enter the canal and must be provided with the number of tugs sufficient to afford safe passage. Agents must make their own arrangements for tug assistance. Such eastbound vessels must clear Reedy Point Bridge, and such westbound vessels the Chesapeake City Bridge, before dark.

Local Regulations

(34) 1. The following rules governing traffic through the Chesapeake and Delaware Canal are issued to supplement the rules and regulations governing the use, administration, and navigation of the waterway which are prescribed by the Secretary of the Army. These rules were effective 8 August 1975, and were amended effective 1 April 1985 and 2 May 1988. Copies of the approved rules and regulations may be obtained from the District Engineer.

(35) 2. Traffic through the canal is monitored by the dispatcher at Chesapeake City. Vessels transiting the canal are subject to the following rules:

(36) a. Vessels exceeding 800 feet are required to have bow thrusters.

(37) b. The maximum combined extreme breadth of vessels, tugs and tows meeting and overtaking each other anywhere between Reedy Point and Town Point, is 190 feet.

(38) c. Vessels, tugs and tows, or any combination thereof, are required to have radiotelephone equipment as specified by the Vessel Bridge-to-Bridge Radiotelephone Act (Public Law 92–63). The radio requirement applies to the following:

(39) (1) Every power-driven vessel of three hundred gross tons and upward.

(40) (2) Every vessel of one hundred gross tons and upward carrying one or more passengers for hire.

(41) (3) Every towing vessel of twenty six feet or over in length.

(42) d. Vessels listed in 2.c. above will not enter the canal until radio communications are established with the dispatcher in Chesapeake City. Communications shall be established on channel 13 two hours prior to entering the canal. (Dispatcher Call Sign is WB–33 and Dispatcher Phone Number is 410–885–5621). The dispatcher also monitors channel 16 for the purpose of responding to transmissions of an emergency nature. Pilots and shipmasters shall acknowledge receipt of 2 hour clearance and conform with supplemental information listed in 3.e. below. All communications with the dispatcher on these frequencies shall be confined to that necessary to transit the Chesapeake and Delaware Canal.

(43) e. A westbound vessel must be able to pass either Pea Patch Island or Reedy Island within 1 hour after receipt of clearance. An eastbound vessel must be able to pass Arnold Point within 1 hour of receipt of clearance. A clearance to enter the canal becomes invalid and a new one must be solicited whenever the pilot or shipmaster determines that the passage at these check points will not be made within 1 hour after the dispatcher has given a clearance to enter the Canal. The dispatcher will be furnished the actual time of passing these check points, along with the estimated time of arrival at Town Point or Reedy Point. A vessel entering or departing the Canal must also report to the dispatcher the time of passing the outer end of the jetties at Reedy Point and Old Town Point Wharf.

(44) f. A clearance by the dispatcher for a vessel's passage through the waterway shall not relieve the owners, agents, and operators of the vessel of full responsibility of its safe passage.

(45) 3. The traffic controls located at Reedy Point and Old Town Point Wharf consist of a flashing green light when the Canal is open and a flashing red light when it is closed.

(46) 4. Vessel monitoring is performed by TV cameras, located at Reedy Point, Old Town Point Wharf and the SRNJ Railroad Bridge. These cameras are remotely controlled and monitored by the dispatcher at Chesapeake City.

(47) 5. Owners, designated agents, or pilots of vessels transiting the Canal will furnish statistical data on cargo and passengers by completing Waterway Traffic Report, ENG 3102–R, which will be mailed or delivered to the Philadelphia District Engineer. This form may be obtained from the District Engineer or the Superintendent of Operations and Maintenance, Chesapeake and Delaware Canal, at Chesapeake City.

(48) 6. Vessel operators are warned that failure to comply with the rules and regulations governing traffic through the Canal will result in referral of violations to the U.S. Coast Guard.

Supplemental Local Regulations

(49) The following rules regarding transit of dead ships or other structures not normally under tow through the Chesapeake and Delaware Canal are issued to supplement the rules and regulations governing the use, administration and navigation of the waterway which are prescribed by the Secretary of the Army.

(50) These regulations appeared in a Notice to Mariners issued by District Engineer, Philadelphia District dated August 14, 1986, and were effective immediately.

(51) All dead and disabled ships, drydocks and all other structures not normally under tow must obtain specific advance approval to transit the waterway in accordance with this notice.

(52) Minimum requirements for these transits are as follows:

(53) (1) First class pilot or towing vessel operator, licensed by U.S. Coast Guard, with minimum experience of 10 previous trips through the C & D Canal, including one trip within the past year, will be on board to supervise transit.

(54) (2) Tugboat Assistance.

(55) (a) Vessels (structures) up to 350 feet in length: minimum 1 tug with at least 1,500 hp.

(56) (b) Vessels (structures) between 350 feet and 550 feet in length: minimum 2 tugs with at least 3,000 total hp.

(57) (c) Vessels (structures) between 550 feet and 760 feet in length: minimum 3 tugs with at least 6,000 total hp.

Chesapeake and Delaware Canal (east entrance), Delaware
Image courtesy of Waterway Images (2006)

(58) Request for transit approval must be received by Chief, Operations Division at least 72 hours prior to desired transit time. Initial requests may be written or verbal. Verbal requests will be confirmed in writing. All requests will provide the following information:

(59) (1) The name and type of dead ship or structure, its length, width, height and draft.

(60) (2) The number, horsepower and configuration of towing vessel(s), including the length of any towing lines (hawsers) to be used.

(61) (3) Specific details regarding any characteristic(s) of the subject ship/structure which may impact on handling during transit through the Canal.

(62) (4) Name and telephone number of point of contact.

(63) Approval, if granted will be given for one transit on a specific date, during daylight hours, with no vessels overtaking or passing in opposite direction. All other rules and regulations governing transit of the Canal will remain in effect.

Channels

(64) The Federal project for the canal provides for a channel 35 feet deep and 400 feet wide. (See Notice to Mariners and latest edition of the chart for latest controlling depths.)

(65) The **Delaware City Branch Channel** extends northward from the canal at Mile 2.5 for 1.5 miles to the Delaware River at Delaware City. In 2005, the controlling depth was 1.7 feet in the channel entrance from the Delaware River shoaling rapidly along the sides, thence in 1983, the controlling depth was 6 feet in the channel. The entrance channel at the Chesapeake and Delaware Canal end of the branch was reported, in 2000, to have a depth of 7 feet. A submerged pile was reported on the west side of the channel. Mariners are cautioned to stay well inside the north and south entrance channels.

(66) A highway bridge over the Delaware City Branch Channel about 1 mile northward of the canal has a bascule span with a clearance of 6 feet; the span is kept in a closed position and need not be opened for the passage of vessels. The overhead power and telephone cables just south of the bridge have a clearance of 30 feet; an overhead power cable 500 feet north of the bridge has a clearance of 64 feet.

(67) Delaware City has been described in chapter 6.

Anchorages

(68) An anchorage basin is provided on the south side of the canal at Mile 12.8, opposite Chesapeake City. The entrance to the basin is subject to periodic shoaling. In 2005, depths of 9 to 9.8 feet were in the entrance; thence depths of 3.4 to 12 feet were inside the wharf on the west side of the basin.

(69) Regulations for the use of the anchorage and mooring basin are given in **207.100(e)** provided previously in this chapter.

(70) A **special anchorage**, with depths of 3 to 4 feet, is on the southeast side of the canal at Mile 16.3, northeastward of Courthouse Point. (See **110.1** and **110.70**, chapter 2, for limits and regulations.)

Local magnetic disturbance

(71) Differences of as much as 6° from the normal variation have been observed in Elk River Channel from Courthouse Point to Old Town Point.

Bridges and cables

(72) The canal is crossed by a vertical-lift bridge and four high-level fixed bridges. All bridge clearances mentioned are at the center of the canal. The fixed highway bridge at Mile 1.6 has a clearance of 136 feet. Two overhead power cables with a least clearance of 161 feet cross the canal at Mile 3.5. The fixed highway bridge at St. Georges, Mile 5.0, has a clearance of 137 feet. The fixed highway bridge at Mile 5.3, has a clearance of 142 feet.

(73) The canal rail bridge across the canal at **Canal Station,** Mile 7.5, has a vertical-lift span with a clearance of 45 feet down and 138 feet up. (See **117.1 through 117.59 and 117.235**, chapter 2, for drawbridge regulations.) The overhead pipeline 1 mile west of the bridge at Mile 8.5 has a reported clearance of 133 feet, and an overhead power cable about 150 yards westward has a clearance of 159 feet.

(74) The fixed highway bridge just west of the town of **Summit Bridge**, at Mile 9.2, has a clearance of 138 feet. Overhead power cables between this bridge and Chesapeake City have minimum clearances of 157 feet.

(75) The fixed highway bridge at **Chesapeake City**, Mile 13.0, has a clearance of 140 feet.

Tides

(76) High and low waters in Delaware River are about 2 hours later than in Elk River. The heights of high and low waters are greatly affected by the winds; northeast storms raise the level and westerly storms lower it. (See the Tide Tables for daily predictions for Reedy Point.)

(77) **Staff gages**, with zeros set at **canal datum**, are at numerous places along the canal and at both ends. The datum is 2 feet below local mean low water at the mouth of Back Creek and about less than 1 foot below at Delaware River.

Currents

(78) The current velocity is 2.6 knots on the flood and 2.1 knots on the ebb at the Reedy Point bridge, and about 2 knots at the Chesapeake City bridge. The flood sets eastward and the ebb westward. (See the Tidal Current Tables for daily predictions for Chesapeake City.) Storms may increase these velocities to 3.0 knots or more; at such times, tows usually have difficulty in making headway against the current.

Ice

(79) Ice sufficient to interfere with the navigation of small craft may be expected at any time between December and April and is worst during January and February. The canal is kept open as long as possible. During mild winters, local vessels use the canal throughout most of the season, but strangers should make inquiries before attempting passage. Wooden vessels passing through thin ice are liable to be cut through at the waterline. Vessels with low horsepower are cautioned against transiting the canal in heavy ice.

(80) During ice navigation season, the Chesapeake and Delaware Canal is a **Regulated Navigation Area**. (See **165.503**, chapter 2, for regulations.)

Pilotage, Chesapeake and Delaware Canal

(81) Pilotage through the canal from Delaware River to Chesapeake City is provided by the Pilots' Association for the Delaware Bay and River. (See Pilotage, Bay and River Delaware, indexed as such, chapter 6.) Pilotage from Chesapeake City to Maryland ports and to Washington, dc, is provided by the Association of Maryland Pilots. (See chapter 15.) Both pilots associations maintain a common station on the north bank of the canal at Chesapeake City. A white motor launch is used for exchanging pilots in the general vicinity of Chesapeake City. Vessels proceeding from Chesapeake City to Washington, dc or the lower part of Chesapeake Bay, when using Maryland pilots, sometimes transfer pilots at a designated transfer area in Chesapeake Bay off the entrance to Patuxent River or on the Potomac River off Piney Point, depending on the port of call.

(82) The Maryland pilots are replaced by Virginia pilots off the entrance of the Patuxent River or on the Potomac River off Piney Point, depending on the port of call.

(83) The Interport Pilots Agency, Inc. offers pilotage to public vessels and private vessels in the coastal trade transiting the Chesapeake and Delaware Canal and continuing to ports in the Delaware Bay and River, Upper Chesapeake Bay, New York Harbor and Long Island Sound. They board vessels at any Delaware River or Upper Chesapeake Bay port, the pilot boarding area off Cape Henlopen as described in Chapter 6, or at the Reedy Point Anchorage near the east end of the C&D Canal. Arrangements for pilot services are made 24 hours in advance with a six hour ETA update through the ship's agent or with Interport Pilots Agency, Inc., 906 Port Monmouth Road, Port Monmouth, NJ 07758–0236, telephone 732–787–5554 (24 hours), or e-mail at interport@verizon.net. Additional information about Interport Pilots can be obtained at: http://www.interportpilots.com.

(84) The Chesapeake and Interstate Pilots Association offers pilot services to U.S. vessels, engaged in the coastwise trade, and to public vessels transiting the Chesapeake and Delaware Canal. Pilots will meet vessels between Cape Henlopen, any port or place on the Delaware Bay and River, or any port or place on the Chesapeake

Bay and its tributaries and provide all pilot services required when vessels use the canal. Arrangements for pilots are made through ships' agents or the pilot office in Norfolk (telephone, 757–855–2733). The pilots use commercial launch services. Advance pilot orders requested with 6-hour ETA update and any subsequent changes requested. Pilots will get underway generally 30 minutes prior to the time they have been ordered.

(85) All pilots carry radiotelephones for bridge-to-bridge communications and for communications with the canal traffic dispatcher at Chesapeake City. Delaware Bay and River pilots use VHF–FM channel 14, and the Maryland pilots use VHF–FM channel 11; all associations use VHF–FM channel 13.

(86) The traffic dispatcher at Chesapeake City also monitors VHF–FM channel 16 and channel 13 on a 24-hour basis.

Supplies and repairs

(87) At Mile 7.5, on the N side of the canal, is a private marina. The entrance is marked by private buoys. In 1991, the entrance channel and basin had reported depths of 10 feet. Berths with electricity, telephones, water, cable hookups, gasoline, diesel fuel, marine supplies and sewage pump-out are available. Hull and engine repairs, dry storage and a 50 ton travel lift are also available. The harbormaster is available 24 hours a day and monitors VHF–FM channel 16.

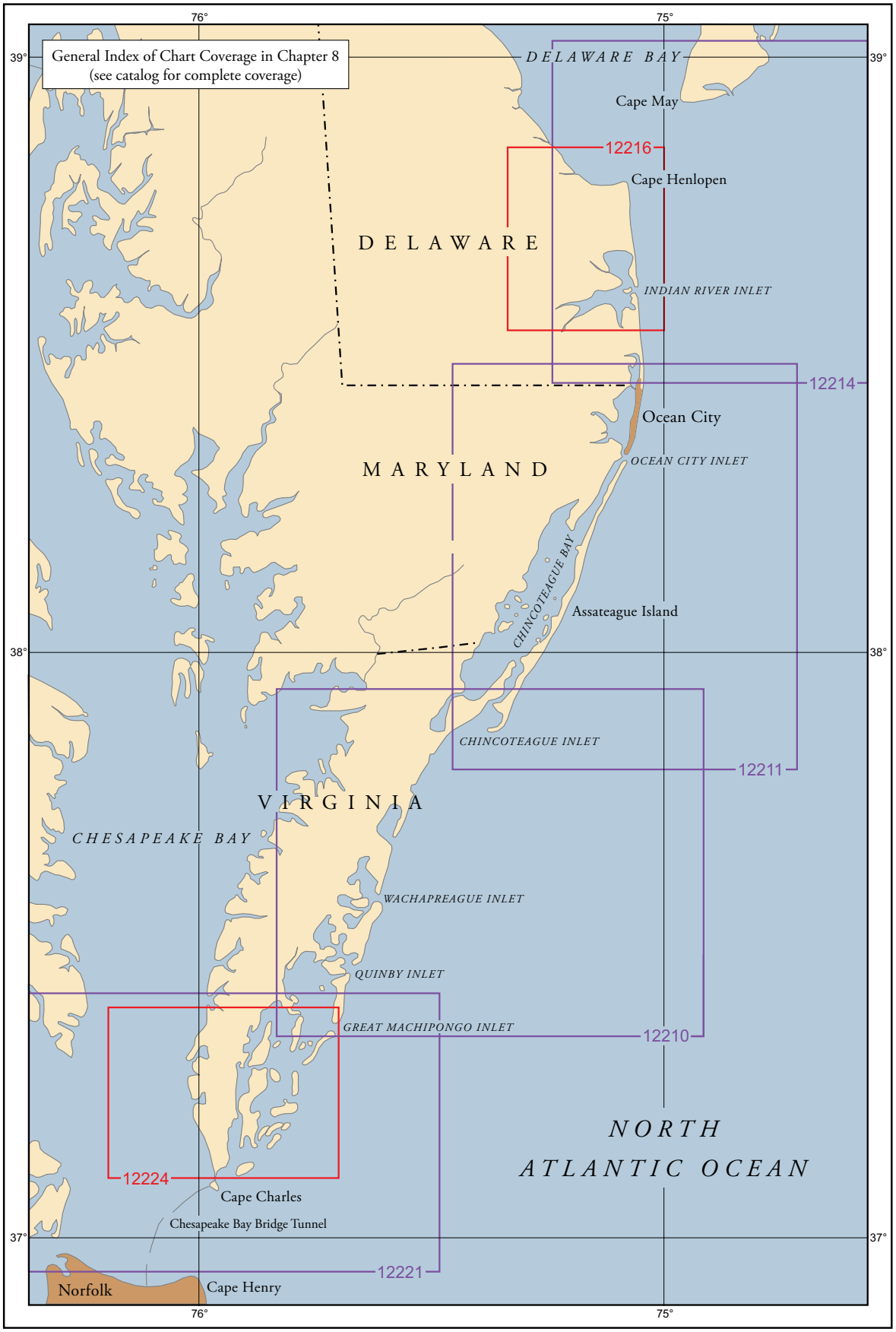
(88) At Chesapeake City, berths, gasoline, diesel fuel, and some marine supplies are available. The principal wharves and slips have reported depths of 7 to 17 feet at their faces.

(89) At Mile 16.2, 0.4 mile eastward of **Courthouse Point**, a privately marked channel leads to a marina. In 2000, the channel had a reported controlling depth of 4 feet. Berths, gasoline, and marine supplies are available. Hull and engine repairs can be made; a 20-ton mobile hoist is available. A boatyard on Courthouse Point has gasoline and a 6-ton lift; minor hull and engine repairs can be made.

(90) (For discussion of Elk River and the upper part of Chesapeake Bay, see chapter 15.)

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12277	Summit Bridge, Chesapeake and Delaware Canal	39º32'N/75º44'W	3.8	3.6	0.1
12277	Reedy Point, Delaware River	39°34'N/75°34'W	5.8	5.5	0.2
12277	Town Point Wharf, Elk River	39°30'N/75°55'W	2.7	2.4	0.2
12377	Back Creek, C&D Canal	39°32'N/75°49W	3.3	3.1	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 November 2011


General Index of Chart Coverage in Chapter 8
(see catalog for complete coverage)
76°
75°
39°
38°
37°
DELAWARE BAY
Cape May
12216
Cape Henlopen
DELAWARE
INDIAN RIVER INLET
12214
Ocean City
OCEAN CITY INLET
MARYLAND
CHINCOTEAGUE BAY
Assateague Island
CHINCOTEAGUE INLET
12211
VIRGINIA
CHESAPEAKE BAY
WACHAPREAGUE INLET
QUINBY INLET
GREAT MACHIPONGO INLET
12210
NORTH
ATLANTIC OCEAN
12224
Cape Charles
Chesapeake Bay Bridge Tunnel
12221
Norfolk
Cape Henry

Delaware-Maryland-Virginia Coast

(1) This chapter describes that section of the Delaware, Maryland, and Virginia coastline extending from Cape Henlopen to Cape Charles and the Virginia Inside Passage. Included in the discussion are Roosevelt Inlet, the Delaware Bay entrance to the Lewes and Rehoboth Canal, Indian River Inlet, Assawoman Canal and Bay, Isle of Wight Bay, Ocean City Inlet, Chincoteague Bay and Inlet, and the various inlets that lead through the barrier beach to the Virginia Inside Passage.

(2) Also described are the cities of Lewes, Rehoboth, Ocean City, and Chincoteague, and several of the smaller communities on these waterways.

North Atlantic Right Whales

(3) Endangered North Atlantic right whales may occur within 30 miles of the Delaware, Maryland and Virginia coasts (peak season: October through November and February through May). (See **North Atlantic Right Whales**, indexed as such in Chapter 3, for more information on right whales and recommended measures to avoid collisions.)

(4) 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 Seasonal Management Area existing around the Delaware Bay and the entrance to the Chesapeake Bay between November 1 and April 30. The areas are defined as the waters within a 20-nm radius of 38°52'27.4"N., 75°01'32.1"W. (Delaware Bay) and 37°00'36.9"N., 75°57'50.5"W. (Chesapeake Bay). (See **50 CFR 224.105** in Chapter 2 for regulations, limitations, and exceptions.)

COLREGS Demarcation Lines

(5) The lines established for Delaware Bay and the inlets of the Delaware-Maryland-Virginia coast are described in **80.503 and 80.505**, chapter 2.

Charts 12210, 12211, 12214, 12221

(6) The coast extends southward for 21 miles from Cape Henlopen to the Delaware-Maryland boundary line, thence south-southwestward for 27 miles to the Maryland-Virginia boundary, and thence 63 miles to Cape Charles. The low sand beaches are backed by bays, rivers, and creeks which are bordered by marsh and woodland. Broken ground fringes the coast, and depths of 36 feet or less are found as far as 12 miles from shore.

(7) Visible from seaward are the summer resorts of Rehoboth Beach, Bethany Beach, Dewey Beach, and Ocean City, all within 30 miles of Cape Henlopen. The most prominent marks south of Ocean City are the light structures and the Coast Guard stations.

(8) The bays and connecting channels back of the barrier beaches form a continuous inside passage from Delaware Bay to Chesapeake Bay, but Assawoman Canal and Little Assawoman Bay are now navigable only for rowboats and outboards.

(9) There are no harbors of refuge for deep-draft vessels along this coast. The inlets are subject to frequent change, and their navigation requires local knowledge.

Fishtrap

(10) **Fishtrap** areas along the coast from Cape Henlopen to Cape Charles have been established under Federal authority and are shown on the charts. Numerous pile remains of former traps are said to menace inshore navigation.

Navigational aids

(11) Most of the navigable inlets are marked by buoys, but the channels shift and the buoys cannot always be depended upon to mark the best water. Breakers form on the shoals even in ordinary weather and are good marks. Some of the interior channels are marked by daybeacons and lights, but others are marked only by bush stakes. The channels through the flats can be followed best at low water when the flats are visible.

Tides

(12) High and low waters occur at about the same time as at Sandy Hook. Levels in the inside waters are greatly affected by winds, westerly winds producing low water and easterly winds high water. In Assawoman, Isle of Wight, Sinepuxent, and Chincoteague Bays, northerly and southerly winds drive the water to the ends of the bays. With strong winds of long duration, depths may be as much as 3 feet above or below the normal level.

Currents

(13) The currents have considerable velocity in the inlets and in the narrow channels connecting the inlets with adjacent bays and sounds. Velocities of as much as 3 knots may be encountered at times in places where the currents are strongest.

Weather

(14) From Cape Henlopen to Cape Charles this coast is exposed to the rigors of the North Atlantic. Winter gales

can be expected about 5 percent of the time while winds of 28 knots or more are twice as frequent. Strongest and most prevalent are those out of the northwest through north, averaging 18 to 20 knots. Wave heights of 10 feet (3 m) or more are encountered 8 to 12 percent of the time from December through March. Winter visibilities suffer from precipitation and fog; visibilities fall below 2 miles (3.2 km) about 3 percent of the time and below 0.5 mile, (0.8 km) 1 to 2 percent of the time. Precipitation occurs about 8 percent of the time.

(15) Spring brings milder conditions. Gales and wind speeds of 28 knots or more occur about one-half as frequently as they did in winter. Directions are variable, but south and southwest winds are most frequent by April. Waves of 10 feet (3 m) or more become increasingly less frequent; by May they are encountered less than 3 percent of the time. However, warm air blowing over still cold water brings fog. Visibilities of less than 0.5 mile (0.8 km) occur about 3 percent of the time; about one-half that fo visibilities less than 2 miles (3.2 km). Precipitation occurs about 6 percent of the time.

(16) Summer, except for the threat of thunderstorms and a rare tropical cyclone, brings good sailing weather. Winds are out of the south and southwest about one-half of the time; westerlies and northeasterlies are also common. Strong winds are unlikely outside of thunderstorms, tropical cyclones, and an occasional frontal passage. Poor visibilities are also uncommon and waves of 10 feet (3 m) or more occur 1 to 2 percent of the time. Precipitation is encountered about 4 percent of the time and about one-half of the time is in the form of thunderstorms. Thunderstorms are most likely from May through September and often occur during the late night and early morning hours at sea. In squall lines winds can reach hurricane force in gusts.

(17) With autumn, comes more of a threat of both tropical and extra tropical storms, variable, strong winds and rough seas. Tropical cyclones are a threat throughout the fall, but particularly in September and October when recurving storms tend to brush this coast on occasion. Extra tropical storms pick up in October and are partially responsible for the increase in northerlies and northwesterlies. Winds out of the east, southwest and northwest are also common. In October, gales occur about 2 percent of the time compared to winds of 28 knots or more, which are encountered about 6 percent of the time. Wave heights of 10 feet (3 m) or more are generated 7 to 8 percent of the time during autumn. At sea visibilities remain good; less than 0.5 mile (0.8 km) less than 1 percent of the time, while less than 2 miles (3.2 km) about 2 percent of the time. Precipitation falls about 5 percent of the time.

Ice

(18) The inside waters north of Chincoteague Bay occasionally are closed by ice during ordinary winters. The tributary waters south of the bay are closed during severe winters, but remain so only for short periods. The principal inlets are rarely closed and are used by local boats throughout the winter.

(19) During the ice navigation season, the inside waters of Maryland, described in this chapter, are a **Regulated Navigation Area**. (See **165.10, 165.33 and 165.503,** chapter 2, for limits and regulations.)

Chart 12216

(20) **Cape Henlopen**, on the southwest side of the entrance to Delaware Bay, is described in chapter 6.

(21) **Roosevelt Inlet**, 3 miles west of Cape Henlopen, is the Delaware Bay entrance to the Lewes and Rehoboth Canal and to Broadkill River. The inlet is protected by jetties that are awash at low water; each jetty is marked by a light on its outer end. The channel is marked by the jetty lights and a **213°** lighted range. In Roosevelt Inlet, the current velocity is about 0.9 knot. (See Notice to Mariners and latest edition of charts for controlling depths.) Gasoline and diesel fuel can be obtained at a yacht club on the northeast side of the inlet.

(22) **Broadkill River** is entered by way of an inside passage that extends northwestward for 2 miles from the Roosevelt Inlet jetties to the old mouth of the river; the river then extends 9 miles westward to the town of **Milton**. (See the latest chart and notice to mariners for the controlling depth in the river.)

(23) Overhead power cables at the entrance to the Broadkill River, just N of the Coast Guard station, have a clearance of 50 feet. Twin fixed highway bridges over Broadkill River have a clearance of 18 feet. The overhead power cable just northwestward of the bridges has a clearance of 64 feet. Above the bridges, the river has numerous snags and much floating debris.

(24) The **Lewes and Rehoboth Canal** is a tidal waterway that extends southeastward and southward for 8 miles from Roosevelt Inlet to Rehoboth Bay. The canal passes northeastward of Lewes and westward of Rehoboth Beach; the entrance to Rehoboth Bay is between marked, submerged, stone jetties a mile southwest of Dewey Beach. (See Notice to Mariners and latest edition of charts for controlling depths.) In 1999, a sunken vessel, marked by a white light, was reported 500 yards south of the State Route 1 highway bridge in about 38°42.3'N., 75°05.6'W. The posted **speed limit** is 4 miles per hour in the canal.

(25) **Lewes**, 1.7 miles inside Roosevelt Inlet, has rail connections and is the southern terminal for the Cape May-Lewes ferry.

(26) Several small-craft facilities are in the vicinity of the first and second bridges at Lewes. Gasoline, diesel fuel, berths, and marine supplies can be obtained, and hull and engine repairs can be made. A 70-foot marine railway and a 25-ton mobile hoist are available.

Bridges and cables

(27) The U.S. Route 9 Business highway bridge over the canal at Lewes has a bascule span with a clearance of 15 feet. The overhead power cable to the west of the bridge has a clearance of 68 feet. The railroad bridge, 0.2 mile southeastward of the highway bridge, has a 46-foot swing span with a clearance of 10 feet; the span remains in the open position except for infrequent passage of trains; the overhead cable at the bridge has a clearance of 68 feet. The U.S. Route 9 fixed highway bridge 100 yards southeastward of the railroad bridge has a 46-foot span with a clearance of 35 feet.

(28) These bridges restrict the normal water flow in the canal and produce very strong currents. Small craft should proceed with caution in these areas.

(29) The State Route 1 Alternate highway bridge over the canal at Rehoboth Beach, 6.5 miles from Roosevelt Inlet, has a 49-foot bascule span with a clearance of 16 feet; the overhead power cables on the north side of the bridge have a least clearance of 55 feet. The State Route 1 fixed highway bridge, 0.3 mile farther southward has a clearance of 35 feet. The overhead power cables on the north and south side of the bridge have a least clearance of 55 feet. (See **117.1 through 117.59 and 117.239**, chapter 2, for drawbridge regulations.)

(30) A yacht club at which slips, gasoline, and some marine supplies are available is in a basin on the east side of the canal 4 miles southeastward of Lewes.

(31) **Rehoboth Bay** has depths of 1 to 7 feet. The 5-mile route down Rehoboth Bay from the Lewes and Rehoboth Canal to Indian River Bay is marked by lighted and unlighted buoys, lights, and daybeacons. Reported depths of 4 feet can be carried through the marked-bay channel to near Light 9, thence in 2004, 3 feet in the dredged section of the channel which leads between the islands separating the two bays. Gasoline, some supplies, and slips are available at the northeast end of Rehoboth Bay at **Dewey Beach**.

(32) **Love Creek**, at the northwest corner of Rehoboth Bay, is navigable for small craft to a milldam near **Robinsonville**, 4 miles above the mouth. An unmarked, privately dredged channel leads from Rehoboth Bay to about 3 miles above the mouth of the creek. In 2000, the channel had a reported centerline controlling depth of 2.0 feet. The fixed highway bridge 2.3 miles above the mouth has an 18-foot channel span with a clearance of 7 feet. Above the bridge are berthing facilities in depths of 1 to 2 feet.

(33) **Herring Creek**, at the southwest corner of Rehoboth Bay, has depths of 3 to 5 feet to the forks 2 miles above the mouth, thence 1 to 3 feet for 0.5 mile up the northern prong and 3 to 5 feet for 1 mile up the southern prong. The creek, partially marked by private buoys, is little used except by local residents.

(34) **Indian River Inlet**, 12 miles south of Cape Henlopen, is the first opening in the barrier beach south of Delaware Bay. The entrance is marked by buoys, and a light is on the end of the south jetty. **Indian River Inlet Coast Guard Station** is on the north side 0.5 mile inside the inlet.

(35) A channel leads from Indian River Inlet through Indian River Bay and up Indian River to Millsboro, 12 miles above the inlet. The channel from the entrance to Buoy 20 in Indian River Bay is subject to continual change due to severe shoaling. The channel is marked by uncharted buoys that are frequently shifted to mark the best water. The channel to Millsboro is marked by daybeacons and seasonal buoys.

Currents

(36) The current velocity is about 2 knots; caution is necessary, because the buoys sometimes tow under.

(37) The fixed highway bridge over Indian River Inlet has a clearance of 35 feet for a midwidth of 100 feet or 32 feet for a width of 200 feet. The stub ends of a former drawbridge, now used as fishing piers, are close westward of the bridge. In 2010, a replacement fixed highway bridge was under construction close W of the existing bridge with a design clearance of 45 feet. An overhead power cable with a clearance of 66 feet crosses the inlet about 100 yards westward of the bridge.

Supplies

(38) Gasoline, diesel fuel, slips, and some marine supplies are available in the small-boat basin on the north side, 0.8 mile inside Indian River Inlet, and at a marina on the south side 0.9 mile inside the inlet. Hull and engine repairs can be made at both facilities. The boat basin has a 10-ton lift, and the marina a 25-ton lift.

Anchorages

(39) A **special anchorage** is on the south side of Indian River Inlet 1.2 miles above the jetties. (See **110.1** and **110.65**, chapter 2, for limits and regulations.)

(40) **Indian River Bay**, a shallow lagoon with depths of 1 to 6 feet, extends for about 5 miles west of Indian River Inlet, then becomes **Indian River**, which is navigable for an additional 7 miles to Millsboro. Overhead power cables with a least clearance of 61 feet crosses Indian River about 2.9 miles above the mouth of the river. The 5-mile route down the bay from Rehoboth Bay to Assawoman Canal is marked by seasonal buoys and daybeacons; the controlling depth is about 2 feet.

(41) The State of Delaware has established State-leased clam and oyster grounds, which extend westward from a line connecting Lingo Point (38°36.4'N., 75°09.4'W.) and Ellis Point (38°35.6'N., 75°08.1'W.) to Daybeacon 30 at the entrance to Indian River and Daybeacon 4 inside Pepper Creek. Mariners are advised to use caution when navigating outside the marked channel in this area because of numerous unlighted stakes, wood spar buoys, and other dangerous markers.

(42) **Pepper Creek**, on the south side of Indian River Bay near its western end, has a dredged channel marked by daybeacons and buoys extending for 3 miles above the entrance. In 1984, the centerline controlling depths

were 2 feet to Daybeacon 12, thence 1 foot to Daybeacon 13. A clam plant is at the upper end of the creek. Gasoline and slips are available 2 miles above the entrance.

(43) Most of the piers and facilities on the north side of Indian River are private.

(44) An overhead power cable with a clearance of 61 feet was reported about 3.5 miles above the entrance to the river.

(45) **Millsboro**, on the south side of Indian River at the head of navigation, has a town bulkhead; gasoline and some supplies are available. About 100 yards below the causeway at Millsboro, there is an overhead power cable with a clearance of 43 feet. The town has railroad-freight service.

(46) **White Creek** is on the south side of Indian River Bay 1.5 miles back of the outer beach. A channel, marked by seasonal buoys and daybeacons, passes through the bay and creek to Assawoman Canal and **Ocean View**. In 2002, the controlling depth in the channel was 1.7 feet to Assawoman Canal, thence depths less than 1 foot to Ocean View. Gasoline and some supplies are available at Ocean View.

Chart 12214

(47) **Assawoman Canal,** a 3-mile land cut that connects White Creek with the north end of Little Assawoman Bay, had a reported controlling depth of .5 foot in 1977. Logs were reported to obstruct the channel at several points. Three fixed highway bridges over the canal have a minimum width of 14 feet and clearance of 4 feet. The power cables over the canal have a minimum clearance of 28 feet.

(48) **Little Assawoman Bay**, behind the barrier beach of **Fenwick Island**, is 3 miles long. The bay, marked by private daybeacons, has depths of 2 to 4 feet, but in some areas shoals to bare.

Chart 12211

(49) **Fenwick Island Light** (38°27'06"N., 75°03'18"W.), 83 feet above the water, is shown from a white tower, about 0.3 mile back of the beach. The tower, just north of the Delaware-Maryland boundary line, is 9 miles south of Indian River Inlet and 21 miles south of Cape Henlopen.

(50) **Fenwick Shoal**, about 5.5 miles eastward of the northern end of Fenwick Island, has a least depth of 14 feet, but the westerly of two wrecks near the crest of the shoal is covered only 6 feet. A lighted buoy marks the southwest end of the shoal.

(51) **Isle of Wight Shoal**, about 8.5 miles northeastward of Ocean City Inlet, has a depth of 20 feet. A 25-foot shoal is about midway between Isle of Wight Shoal and Fenwick Shoal.

(52) A narrow thoroughfare links the southern end of Little Assawoman Bay with Assawoman Bay; the controlling depth is about 2 feet. It is navigable by small boats with local knowledge. The fixed highway bridge near the north end of the thorofare has a width of 37 feet and a clearance of 11 feet.

(53) **Assawoman Bay** and **Isle of Wight Bay** form a continuous lagoon that extends from close southward of Little Assawoman Bay to Ocean City. The bays have depths of 4 to 6 feet along their western sides, and are frequented by boats from Ocean City.

(54) The State Route 90 fixed highway bridge with a clearance of 35 feet crosses Isle of Wight Bay between Isle of Wight and Fenwick Island.

(55) **Ocean City Inlet** (38°19.4'N., 75°05.2'W.), between Fenwick Island and Assateague Island, is 29 miles south of Cape Henlopen and is the only break in the barrier beach between Indian River Inlet and Chincoteague Inlet. The entrance is between stone jetties, but the north jetty and the outer end of the south jetty are covered at high water. A 200-foot-long fishing pier is 0.2 mile north of the north jetty.

No-Discharge Zone

(56) The State of Maryland, with the approval of the Environmental Protection Agency, has established a No-Discharge Zone (NDZ) in the northern Coastal Bays. The NDZ includes the waters of the Ocean City Inlet, Ocean City commercial fish harbor (Swordfish Basin), Isle of Wight Bay and Assawoman Bay. The area covered is defined as follows: Ocean City Inlet – west of a line beginning at a point at or near the east end of the north Ocean City Inlet jetty at 38°19'27.0"N., 75°05'05.5"W., then running approximately 248° to a point at or near the east end of the south Ocean City Inlet jetty at 38°19'20.7"N., 75°05'24.9"W.; and Sinepuxent Bay – north of a line beginning at a point at or near the shore of the southeast entrance of the Ocean City commercial fish harbor (Swordfish Basin) at 38°19'37.0"N., 75°06'06.0"W., then running approximately 110° to a point at or near the shore at the northwest tip of Assateague Island at 38°19'32.0"N., 75°05'49.0"W.; and Maryland-Delaware line – south of the Maryland-Delaware line beginning at a point at or near the east side of Assawoman Bay at 38°27'04.5"N., 75°04'11.2"W., then running approximately 270° to a point at or near the west side of Assawoman Bay at 38°27'04.4"N., 75°05'09.3"W. (see chart 12211 for limits).

(57) Within the NDZ, discharge of sewage, whether treated or untreated, from all vessels is prohibited. Outside the NDZ, discharge of sewage is regulated by **40 CFR 140** (see chapter 2).

Coast Guard

(58) **Ocean City Coast Guard Station** is 0.6 mile inside the inlet on the southwest side of Ocean City.

(59) **Little Gull Bank**, 2.5 miles southeastward of Ocean City Inlet, has a depth of 15 feet and is marked at its southwest end by a buoy. **Great Gull Bank**, 5 miles southeastward of the inlet, has a depth of 17 feet at its

southwest end and is marked at its northern end by a lighted buoy.

(60) **Ocean City**, that part of Fenwick Island barrier beach in Maryland, is a large summer resort visited by many small boats and is a shipping point for a large amount of seafood. Numerous water tanks and numerous high-rise condominiums are prominent along the beach of this resort.

(61) Ocean City Inlet is subject to continual change. A dredged channel leads westward from the west end of the entrance jetties to the head of Commercial Fish Harbor. In 2010, the controlling depths were 8.4 feet in the south half and 7.5 feet in the north half of the approach to the harbor, thence 2.1 feet (6.4 feet at midchannel) to the head of the harbor. Another dredged channel leads northward from inside the inlet along the inner side of Ocean City to the middle of Isle of Wight Bay. In 1976, the midchannel controlling depth was 6 feet to Isle of Wight Bay Warning Buoy C. Between Buoy C and deep water in the northern part of Isle of Wight Bay is a shoal area where the buoys are periodically moved to mark the best water; caution is advised.

(62) The entrance to Ocean City Inlet is marked by a light near the outer end of the north jetty and lighted buoys that are shifted in position with changing channel conditions. During the summer months fishing vessels anchor at the entrance to the inlet near the north and south jetties. Within the inlet a strong ebb current exists. Caution is advised when entering and transiting the inlet.

(63) A large, cylindrical water tank, about 1.5 miles west of Ocean City Inlet, is prominent and is a good landmark while entering the inlet.

(64) Lights, lighted and unlighted buoys, and a daybeacon mark the channel to Isle of Wight Bay.

(65) The U.S. Route 50 highway bridge over Isle of Wight Bay from the mainland to Ocean City, 0.9 mile above the entrance jetties, has a bascule span with a clearance of 18 feet. The bridgetender monitors VHF–FM channel 16 and works on channels 13, and 68; call sign KYU–698. (See **117.1 through 117.59 and 117.559**, chapter 2, for drawbridge regulations.) Pile remains of an abandoned highway bridge are 0.2 mile south of the bridge.

(66) There are numerous privately owned pile and timber piers and bulkhead wharves on the inner side of Ocean City. The **Commercial Fish Harbor**, on the mainland side 1 mile directly back of the inlet, has a 1,000-foot public bulkhead landing and several private bulkhead wharves open to the public for transaction of business with the owners.

Small-craft facilities

(67) There are several small-craft facilities at Ocean City and in Commercial Fish Harbor. Gasoline, diesel fuel, water, berths, and marine supplies can be obtained at most of the facilities, and hull and engine repairs can be made at some.

(68) **Sinepuxent Bay**, narrow and mostly shoal, and **Chincoteague Bay**, with depths of 4 to 7 feet along its western side but shoal along its eastern side, are behind **Assateague Island** and provide a 30-mile inside route for small boats from Ocean City to Chincoteague. The bays are used by fishing and pleasure boats. The Maryland-Virginia boundary line is marked by an orange and white buoy and by orange-bordered daymarks on piles.

(69) A dredged channel, marked by lights, lighted buoys, and daybeacons, extends 12 miles through Sinepuxent Bay to open water in Chincoteague Bay where the route to Chincoteague follows lights marking the shoal areas. In 1991, the controlling depths were 5 feet to Coffins Point; thence 3 feet to Sinepuxent Bay Channel Light 13; thence 4 feet to Chincoteague Bay. Sinepuxent Bay channel is subject to frequent shoaling, and lesser depths may be encountered. In 1990 a submerged rock was reported about 60 yards W of Sinepuxent Bay Daybeacon 1 in about 38°19'34"N., 75°05'54"W.

(70) The State Route 611 fixed highway and pedestrian bridge across Sinepuxent Bay has a clearance of 35 feet. Submerged pilings from a former overhead cable cross the bay in the vicinity of Sinepuxent Bay Channel Daybeacons 27A and 28.

(71) **Public Landing** (38°08.9'N., 75°17.2'W.), on the mainland side of Chincoteague Bay 15 miles from Ocean City Inlet, has a public wharf, private landings, and fish piers; all have depths of about 4 feet alongside. A highway leads westward from the landing to **Snow Hill** on Pocomoke River. A small-boat basin with depths of 3 feet and a launching ramp is entered just north of the piers.

(72) A marina at the entrance to **Tanhouse Creek**, 1 mile south of Public Landing, has gasoline, diesel fuel, and an 8-ton mobile hoist for hauling out boats for minor hull and engine repairs. The entrance to the creek is marked by a light.

(73) **George Island Landing** is a small town on the mainland 0.8 mile northward of **Purnell Point** (38°01'42"N., 75°21'36"W.). The public wharf at the town is reached from the southward from Chincoteague Bay through a private channel marked by lights and daybeacons. In 1970, depths of 5 feet were reported in the channel and alongside the wharf. An overhead power cable with a clearance of 28 feet crosses the channel near the wharf.

(74) **Greenbackville**, 1.5 miles southwestward of Purnell Point, is a village on the mainland side of Chincoteague Bay just south of the Maryland-Virginia boundary line and 4 miles north of Chincoteague. In 2007, the channel into the harbor, marked by lights, had a controlling depth of 3.0 feet (4.2 feet at midchannel). A repair yard in the harbor has a marine railway that can handle craft up to 45 feet for minor hull and engine repairs.

(75) The narrow dredged channel marked by lights and daybeacons, 4.5 miles south of Purnell Point, is usually used to reach Chincoteague from Chincoteague Bay. In 1997, the channel had a controlling depth of 6 feet. The other passages between Chincoteague Bay and Chincoteague Inlet through marshy islands west of

Chincoteague Island are used only by small boats with local knowledge. Controlling depths through these passages range from 1 to 6 feet, and the fixed bridges over them have clearances of 4 to 12 feet.

(76) **Assateague Light** (37°54'40"N., 75°21'22"W.), 154 feet above the water, is shown from a 142-foot red and white horizontally banded conical tower 3 miles from the south end of Assateague Island. The light stands well above the surrounding trees.

(77) **Winter Quarter Shoal,** 11 miles east-northeast of Assateague Light has several depths of 12 to 19 feet, but a wreck just west of the highest part is covered only 5 feet; a buoy marks the west side of the wreck. During periods of high winds and seas, breakers have been observed over the shoal.

(78) **Blackfish Bank**, about 6 miles eastward of the south end of Assateague Island, has several depths of 11 to 16 feet along its 5-mile length, and near its southwest end is a depth of 11 feet over a wreck. A buoy is 0.6 mile south of the wreck. A 25-foot shoal 2.5 miles east of the wreck is marked on its east side by a lighted gong buoy. Coasting vessels seeking protection from westerly weather pass westward of Blackfish Bank. In 1981, a wreck, covered 25 feet, was reported about 10 miles east of Blackfish Bank in about 37°52'07"N., 75°03'30"W. A possible wreck, reported covered 25 feet, is about 5 miles south-southeast of Blackfish Bank.

(79) **Chincoteague Shoals**, extending about 3 miles east and south of the lower end of Assateague Island, have depths of 4 to 18 feet. An unlighted buoy and a lighted bell buoy are near the 5-fathom curve southerly of the shoals. Breakers have been observed over the 5-foot shoals when winds are southerly.

(80) **Chincoteague Inlet** (see also chart 12210), between Assateague Island and Wallops Island, is 30 miles south-southwestward from Ocean City Inlet. The marked channel through the inlet to **Chincoteague Channel** is subject to frequent change; the buoys are shifted with changing conditions. Breakers are evident on either side of the channel. A sunken wreck is about 0.4 mile southwest of Fishing Point in 37°51'52"N., 75°24'03"W. Caution is advised when navigating the inlet.

(81) Assateague Light and the lookout tower on the southern tip of Assateague Island are good marks for approaching Chincoteague Inlet.

(82) **Fishing Point**, the hook-shaped sandspit forming the south side of **Toms Cove**, is continually making out to the westward, requiring caution when in the vicinity.

(83) **Chincoteague**, occupying most of **Chincoteague Island**, is between the mainland and the south end of Assateague Island. The highway bridge to Chincoteague has a swing span with a clearance of 15 feet over the main channel. (See **117.1 through 117.49 and 117.1005**, chapter 2, for drawbridge regulations.) The town is principally a shellfish and fishing center, but pleasure craft operate from here during the summer. The wharves and piers along the waterfront have depths of 3 to 10 feet alongside. There are small-craft facilities at Chincoteague that can provide gasoline, diesel fuel, water, berths, and limited marine supplies. Hull and engine repairs can be made; a 40-ton marine railway at Chincoteague can handle craft up to 80 feet.

(84) A boat basin is at the extreme southwest end of Chincoteague Island. In 2005, the dredged entrance channel, marked by a light, had a controlling depth of 5 feet; thence 6.8 to 8 feet was in the basin.

Coast Guard

(85) **Chincoteague Coast Guard Station** is on the east side of Chincoteague Channel, 0.3 mile south of the highway bridge.

Chart 12210

(86) The 35-mile stretch of coast between Chincoteague Inlet and Great Machipongo Inlet is formed by six islands of about equal length. The islands are separated from each other by narrow inlets and from the mainland by marsh and flats through which are numerous sloughs and channels.

(87) **Wallops Island**, northernmost of the six, is on the southwest side of Chincoteague Inlet.

Danger zone

(88) A **danger zone** extends for about 5 miles off the coast of Wallops Island and covers the entrance to Chincoteague Inlet. A strobe light is displayed at night from a tower in about 37°15'16"N., 75°29'06"W., about 30 minutes prior to the commencement of and during rocket launching operations. (See **334.130** chapter 2, for limits and regulations.)

(89) **Assawoman Inlet**, the ocean entrance between **Wallops Island** and **Assawoman Island**, is very shallow and is not used. **Gargathy Inlet**, the ocean inlet separating Assawoman Island and **Metompkin Islands**, is not used.

(90) **Metompkin Inlet**, the ocean entrance between Metompkin Islands and **Cedar Island**, is used by some small local fishing and oyster boats. The changeable entrance channel is unmarked and should not be entered without local knowledge.

(91) **Porpoise Banks**, 10 miles offshore from Metompkin Inlet, have irregular bottom with depths of 34 to 40 feet.

(92) **Wachapreague Inlet**, between Cedar Island and **Parramore Island**, is 20 miles south-southwestward of Chincoteague Inlet. The entrance is marked by a lighted bell buoy and unlighted buoys that are shifted in position with changing channel conditions. The controlling depth is about 5 feet through the inlet, which is used by many fishing boats and by some boats seeking shelter, but should be entered only with local knowledge.

Anchorages

(93) The best anchorage is in **Horseshoe Lead**, southwest of the entrance, where there are depths of 20 to 30 feet west of the middle ground.

Coast Guard Station

(94) **Wachapreague Coast Guard Station** is about 4.0 miles WNW of Wachapreague Inlet in the town of Wachapreague. The remains of the inactive Coast Guard Station Parramore Beach are located 0.5 mile south of the inlet.

(95) **Parramore Banks** extend about 8 miles offshore from Wachapreague Inlet. The area is lumpy and has numerous depths of 18 to 30 feet. A lighted gong buoy is east of the banks.

(96) Two fish havens are about 2.6 miles and 7.5 miles east-southeast, respectively, from Wachapreague Inlet.

(97) **Wachapreague,** a town on the mainland about 4 miles west-northwest of Wachapreague Inlet, is an oystering and fishing center, and is a base for some pleasure boats during the summer. A depth of about 4 feet can be carried from Wachapreague Inlet through **Hummock Channel** and **Wachapreague Channel,** marked by lights, to the wharves and marinas at the town. Gasoline, diesel fuel, berths, and some marine supplies can be obtained. Hull and engine repairs can be made; largest marine railway, 50 feet.

(98) **Quinby Inlet**, the ocean entrance between Parramore Island and Hog Island, has a fan of breakers across the bar at the entrance. The buoys marking the inlet are frequently shifted and not charted. In 2006, a draft of 5 feet could be carried through the inlet. The inlet should not be used without local knowledge.

(99) **Quinby** is a village on the mainland about 6 miles north-northwest of Quinby Inlet. A channel to the village, marked by lights, follows **Sandy Island** Channel to **Upshur Bay**, thence through a slough in the mudflats to a dredged channel leading to a basin that has a public landing with a pump-out station available. In 2010, the controlling depth was 1 foot in the dredged channel, thence 2.6 feet in the basin. A no-wake **speed limit** is enforced.

(100) **Great Machipongo Inlet**, the ocean entrance between Hog Island and **Cobb Island**, has breakers that form on the shoals on either side of the entrance at all times, but on the bar only in heavy weather. The inlet is marked by buoys that are shifted in position with changing channel conditions. The controlling depth is about 12 feet over the bar.

(101) **Great Machipongo Channel** extends northwestward through Hog Island Bay from the inlet to the mainland where it continues as **Machipongo River**. **Willis Wharf**, on the west bank of **Parting Creek** 1 mile above the junction with Machipongo River, is a base for shellfish and fishing boats. A public launching ramp is available. A marine railway here can handle craft up to 60 feet for do-it-yourself repairs. In 2005, the controlling depth in the dredged channel in Parting Creek was 1.7 feet in the west half and 6.5 feet in the east half to the turning basin at Willis Wharf, thence 8 feet to the head of the project about 275 yards above the wharf. The turning basin just above Daybeacon 18 had depths of 2.1 to 8.0 feet.

(102) A state-owned boat harbor is just below Willis Wharf on the west side of Parting Creek. In 1994, depths of 2 feet were available in the channel leading to the harbor. An area with about 41 slips available for commercial fishing boats. The harbor has electricity, water, and a launching ramp.

Chart 12224

(103) **Sand Shoal Inlet**, the ocean entrance between Cobb Island and **Wreck Island**, may be entered through three channels. **Northeast Channel**, protected by extensive shoaling to northward and marked by buoys shifted in position with changing channel conditions, leads along the south end of Cobb Island; the controlling depth is about 10 feet over the bar. **Southeast Channel** is straight, but the bar breaks in heavy weather; the controlling depth is about 10 feet over the bar. **South Channel**, east of Wreck Island, has a controlling depth of about 8 feet. The latter two channels are not marked and should not be used by strangers.

Anchorages

(104) A good fair-weather anchorage is in the channel near the discontinued Coast Guard station east of **Little Cobb Island** for boats able to cross the entrance bar with 3 feet over it.

(105) **Sand Shoal Channel**, marked by lights and daybeacons, extends westward from Sand Shoal Inlet for 6 miles where it joins a marked dredged channel leading to the wharves and public bulkhead at **Oyster** on the mainland. In 2010, the midchannel controlling depth was 3 feet, thence 5 feet was in the basin at Oyster. Public piers and a launching ramp are on the northern side of the basin. Numerous wrecks are reported near these facilities; caution is advised. Oyster is the shipping point for large amounts of clams and oysters.

(106) **Ship Shoal Inlet**, the ocean entrance between Ship Shoal Island and **Myrtle Island**, is shallow and unmarked; it is used only by local oyster boats. There is deep water back of the inlet, but the channels to the inside passages are shallow and tortuous.

Danger zone

(107) The **danger zone** of a bombing and gunnery range is centered on Myrtle Island, 6 miles northeastward of Cape Charles Light. (See **334.330**, chapter 2, for limits and regulations.)

(108) **Little Inlet**, between Myrtle Island and Smith Island, is shallow and is little used. Small boats can connect with the inside passage at high water.

(109) **Cape Charles** and the islands on the north side of the entrance to Chesapeake Bay are described in chapter 9.

(110) **Smith Island Inlet**, between Smith Island and Fishermans Island, is fairly wide, but the narrow, changeable channel lies between sandbars and breakers. The inlet is used by many local boats with drafts of 3 to 4 feet, but it is unmarked and should not be used by strangers. The controlling depth over the bar is said to be 1.5 feet.

Charts 12211, 12210, 12221

(111) **Virginia Inside Passage** is between the barrier beach along the Atlantic Ocean on the east and the Virginia portion of the mainland peninsula on the west. The passage extends 74 miles from the south end of Chincoteague Bay through creeks, thorofares, marshy cuts, and bays to enter Chesapeake Bay at Cape Charles. The route is marked with lights and daybeacons which have daymarks with white reflector borders to distinguish them from aids to navigation marking other waterways. Buoys are temporarily established from time to time to mark destroyed aids or critical places.

(112) The Federal project depth is 6 feet for the waterway. Maintenance dredging is performed to provide a 6-foot controlling depth, but due to continuous shoaling 3 feet or less may be found in places, particularly inside the ocean inlets. The overhead clearance is limited only by the 40-foot fixed bridge across Cat Creek, 8 miles southward of Chincoteague, the 50-foot clearance of the power cable over Longboat Creek inshore from Metompkin Inlet, 22 miles southward of Chincoteague, and the 40-foot fixed bridge at Cape Charles.

Tides

(113) The mean range of tide varies in the inlets along the Virginia coast; greater fluctuations in the water level in the inside waters are caused by high winds and storms.

Supplies

(114) Gasoline, diesel fuel, and some marine supplies are available at Wachapreague, 29 miles south of Chincoteague; at Quinby, 33 miles south of Chincoteague; at Willis Wharf, 37 miles south of Chincoteague; and at Oyster, 60 miles south of Chincoteague and 12 miles north of Cape Charles. Hull and engine repairs can be made at Wachapreague.

(115) From Chincoteague, the Virginia Inside Passage follows Chincoteague Channel across Chincoteague Inlet to **Walker Point**, thence through **Ballast Narrows**, **Island Hole Narrows**, the dredged cut in **Bogues Bay**, and **Cat Creek** to the sloughs marked by lights and daybeacons back of Assawoman Inlet, 10 miles southwestward of Chincoteague. The fixed highway bridge over Cat Creek has a clearance of 40 feet. The overhead power cable just north of the bridge has a clearance of 60 feet.

(116) From 1 mile back of Assawoman Inlet, the inside passage continues through **Northam Narrows**, thence through dredged cuts in **Kegotank Bay** and back of Gargathy Inlet to **Wire Passage**, 15 miles southwestward of Chincoteague.

(117) From Gargathy Inlet, the inside passage goes through Wire Passage into a dredged cut in **Metompkin Bay**, and enters Folly Creek westward of Metompkin Inlet. A dredged channel with a controlling depth of 1.5 feet in 2006, extends about 0.8 mile up **Parkers Creek** from Virginia Inside Passage Light 80. The channel is marked by a light, buoys, and daybeacons. **Folly Creek**, which leads westward from the south end of Metompkin Bay, has a depth of 1 foot to the landing at its head, 3 miles above the mouth. A launching ramp and a pier are on the south side of Folly Creek about 1 mile west of Light 87.

(118) The passage continues through a dredged cut from Folly Creek into **Longboat Creek**, which has a power cable over its northern part with a clearance of 50 feet, thence through cuts in **Cedar Island Bay**, **Teagles Ditch**, and **Burtons Bay** into Wachapreague Channel which leads to Wachapreague, 29 miles southward of Chincoteague. Supplies and repair facilities are available at Wachapreague. (Refer to previous description in this chapter.)

(119) From Wachapreague Channel, the passage continues through a cut in **Bradford Bay**, a part of **Millstone Creek**, a cut in **Swash Bay**, a part of **The Swash,** and **Little Sloop Channel** to Sandy Island Channel, 3 miles inside Quinby Inlet and 36 miles southward of Chincoteague.

(120) The passage southward of Quinby Inlet follows **Sloop Channel** and a dredged cut into **Cunjer Channel**, thence westward in **North Channel** at the north end of **Hog Island Bay** to Great Machipongo Channel, 43 miles southward of Chincoteague.

(121) After passing through Great Machipongo Channel to a point 2 miles inside Great Machipongo Inlet, the route goes westward through **Gull Marsh Channel**, thence southwestward through a natural channel and cut in **Outlet Bay** and **Spidercrab Bay** to **Eckichy Channel**, thence southeastward to Sand Shoal Channel, 1.5 miles inside Sand Shoal Inlet, 56 miles southward of Chincoteague.

(122) From inside of Sand Shoal Inlet, the passage continues westward through Sand Shoal Channel and southward through **Mockhorn Channel** to Magothy Bay.

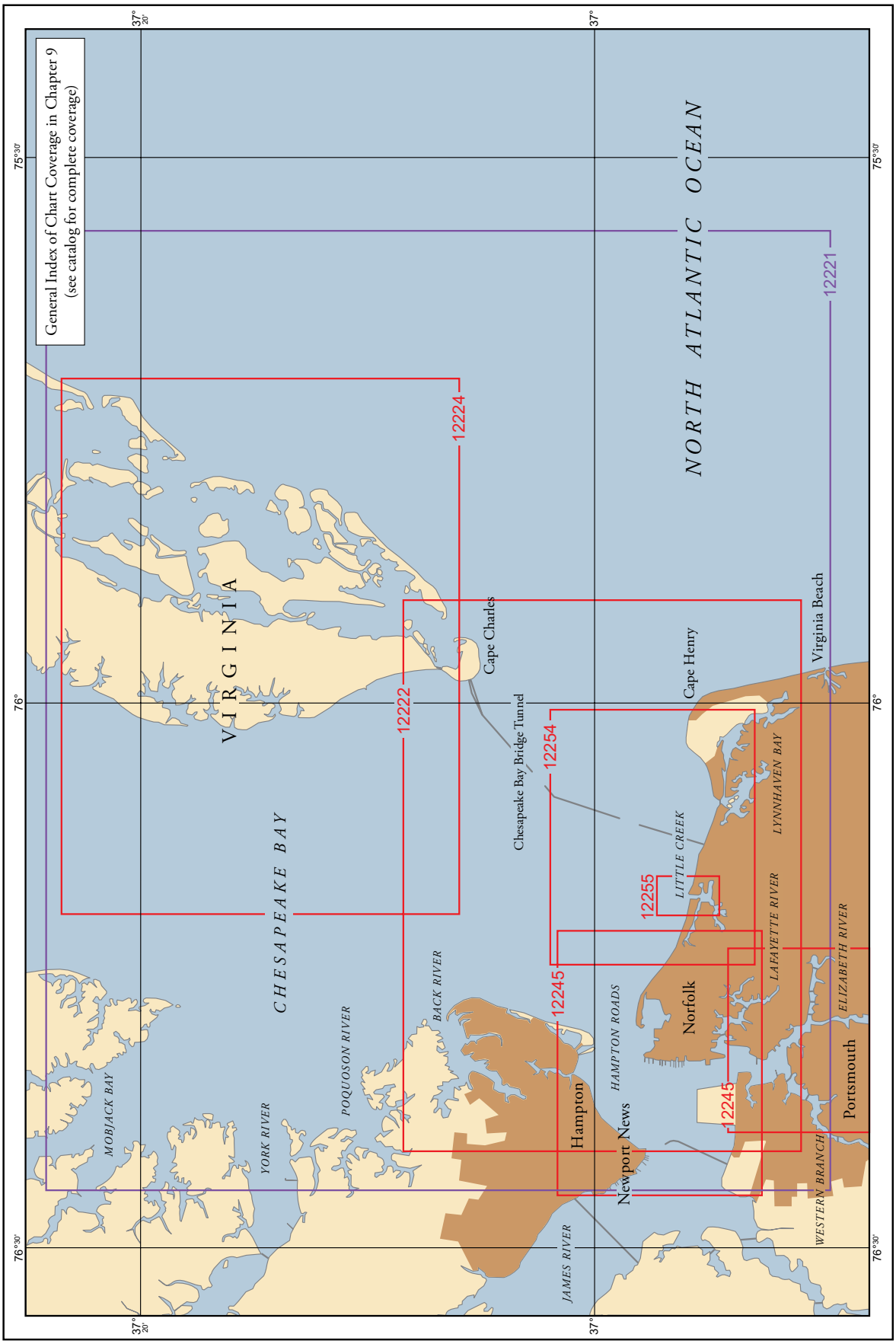
(123) **Magothy Bay,** which extends southward from Mockhorn Channel to Smith Island Inlet, is shallow except in the well-marked inside passage which passes through the bay to Cape Charles. **Magotha** is a village on the west side of the bay 3.5 miles northwestward of Cape Charles Light.

(124) From the southern part of Magothy Bay, the passage continues southwestward through a dredged cut across Cape Charles into the deep water in Chesapeake Bay. The fixed highway bridge over the passage from

Cape Charles to Fishermans Island has a clearance of 40 feet.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12210	Harbor of Refuge, Chincoteague Island	37º54'N/75º24'W	2.8	2.6	0.1
12210	Metomkin Inlet	37º40'N/75º36'W	4.1	3.8	0.2
12211	Ocean City	38º20'N/75º05'W	3.9	3.5	0.2
12211	Chincoteague Channel, south end	37º54'N/75º24'W	2.5	2.3	0.1
12214	Cape May Point, Delaware Bay	38º57'N/74º58'W	5.4	5.0	0.2
12216	Rehoboth Beach	38°43'N/75°05'W	4.4	4.1	0.2
12216	Breakwater Harbor	38°47'N/75°07'W	4.7	4.2	0.2
12221	Fishermans Island, Chesapeake Bay	37°06'N/75°59'W	3.4	3.2	0.1
12221	Wolf Trap Light, Chesapeake Bay	37°23'N/76°11'W	1.8	1.7	0.1
12221	Tue Marshes Light, York River entrance	37°14'N/76°23'W	2.5	2.3	0.1
12221	Old Point Comfort	37°00'N/76°19'W	2.8	2.6	0.1
12224	Sand Shoal Inlet, Cobb Island	37°18'N/75°47'W	4.5	4.2	0.2
12224	Cape Charles Harbor, Chesapeake Bay	37°16'N/76°01'W	2.7	2.4	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 November 2011


General Index of Chart Coverage in Chapter 9
(see catalog for complete coverage)
NORTH ATLANTIC OCEAN
VIRGINIA
CHESAPEAKE BAY
MOBJACK BAY
YORK RIVER
POQUOSON RIVER
BACK RIVER
JAMES RIVER
Hampton
Newport News
HAMPTON ROADS
Norfolk
LITTLE CREEK
LYNNHAVEN BAY
LAFAYETTE RIVER
ELIZABETH RIVER
WESTERN BRANCH
Portsmouth
Virginia Beach
Cape Henry
Cape Charles
Chesapeake Bay Bridge Tunnel
12221
12222
12224
12245
12245
12254
12255
75°30'
76°
76°30'
37°
37° 20'

Chesapeake Bay Entrance

(1) This chapter describes the deep-draft southerly entrance to Chesapeake Bay from the Atlantic Ocean; the waters of Lynnhaven Roads, Lynnhaven Inlet, Little Creek, Hampton Roads, Willoughby Bay, Lafayette River, and Elizabeth River, including Western, Eastern, and Southern Branches; and the ports of Hampton, Newport News, Norfolk, Berkley, Portsmouth, and Chesapeake.

COLREGS Demarcation Lines

(2) The lines established for Chesapeake Bay are described in **80.510**, chapter 2.

Weather

(3) This summary provides climatological information applicable to the entire Chesapeake Bay. From November through April Chesapeake Bay, particularly the southern portion, is rough sailing. Storms moving up the Atlantic coast generate winds out of the northeast quadrant ahead of their centers; speeds often reach 30 to 50 knots. Several days of strong and gusty northwest winds may follow. Strong cold fronts from the west can generate 25 to 45 knot gusts over open water. Waves associated with strong winds can be rough and bad chop develops when these winds oppose strong tidal currents. Northerlies of 25 knots or more, over a long fetch of the bay, can easily build 8 to 10 foot seas in the central portion and 5- to 7-foot (1.5 to 2.1 m) seas in the south. Seas of 8 feet (2.4 m) or more occur about 2 to 4 percent of the time from fall through early spring, in the bay. Gales can occur from September through March.

(4) Another problem during this period is poor visibilities. Fog forms most often when warm, moist air moves across the bay's cold waters from the southeast through south. Most of the 30 to 40 dense fog days each year develop from January through April. Dense fog is more common offshore and should be expected on unusually warm, humid winter and spring days. Fog over particularly cold waters with winds less than 10 knots may drop visibilities to near zero. Precipitation, particularly snow, may also hamper visibilities.

(5) When temperatures drop below about 28°F (-2.2°C) and winds are blowing at 13 knots or more, there exists a potential for moderate superstructure icing. This potential exists in the bay from November through March; January and February are the worst months when the potential exists about 3 percent of the time.

(6) During March and April, cold fronts often trigger fast-moving narrow bands of thunderstorms. Preceding the cold front these bands move eastward at 10 to 30 knots generating lightning and gusty winds of gale force. Thunderstorms are also a bay-wide threat during spring and summer when they develop about 6 to 9 days each month. They may develop over land during the afternoon as warm, humid air is forced aloft by surface heating. The thunderstorm may precede a cold front. When a cold front passes during a period of maximum afternoon heating thunderstorms may be severe. In spring and early summer they usually develop to the west of the bay and move toward the northeast at speeds of 25 to 35 knots. Occasionally thunderstorms will approach from the northwest; these are often severe, tend to move very fast, and can pack winds reaching 70 to 90 knots. Severe squall lines can also generate tornadoes which may move over the bay developing waterspouts; winds can exceed 200 knots in these systems. By midsummer, fronts become weaker and less frequent and thunderstorms are mainly the air mass type which move at 10 to 20 knots and usually do not organize into a squall line. Thunderstorms are likely to occur on 8 to 9 days in July compared to 6 to 7 days in August.

(7) Good weather in late summer and fall is compromised mainly by the threat of a tropical cyclone, particularly from mid-August through the first week in October. A hurricane affects the Chesapeake Bay about once every 10 years on the average. Thunderstorms occur on 1 to 3 days per month in September and October and are usually associated with increasingly frequent and rigorous cold fronts. Fog becomes more of a problem, particularly north of Annapolis. This is a morning fog that forms on 1 to 4 days per month during September and October over the upper reaches of the bay; it usually lifts by noon. In late summer and autumn waterspouts may be sighted. These are short-lived and less severe than those associated with thunderstorms; maximum winds climb to about 50 knots. They are caused by cooler air overriding a body of warm moist air in association with a cloud build up over the bay; they usually occur in fair weather.

(8) (See Appendix B for **Chesapeake Bay meteorological table**.)

Chart 12221

(9) **Chesapeake Bay**, the largest inland body of water along the Atlantic coast of the United States, is 168 miles long with a greatest width of 23 miles. The bay is the approach to Norfolk, Newport News, Baltimore, and many lesser ports. Deep-draft vessels use the Atlantic

entrance, which is about 10 miles wide between Fishermans Island on the north and Cape Henry on the south. Medium-draft vessels can enter from Delaware Bay on the north via Chesapeake and Delaware Canal, and light-draft vessels can enter from Albemarle Sound on the south via the Intracoastal Waterway.

(10) The waters surrounding a vessel that is carrying liquefied petroleum gas are a **safety zone** while the vessel transits the Chesapeake Bay and Elizabeth River. (See **165.506**, chapter 2, for limits and regulations.)

North Atlantic Right Whales

(11) Endangered North Atlantic right whales may occur within 30 miles of the Virginia coasts in the approaches to the Chesapeake Bay (peak season: November through April, although right whales have been sigted in the area year round). (See **North Atlantic Right Whales**, indexed as such in Chapter 3, for more information on right whales and recommend 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 Seasonal Management Area existing around the entrance to the Chesapeake Bay between November 1 and April 30. The area is defined as the waters within a 20-nm radius of 37°00'36.9"N., 75°57'50.5"W. (See **50 CFR 224.105** in Chapter 2 for regulations, limitations, and exceptions.)

Mileages

(13) Many of the distances in this and later Chesapeake Bay chapters are given in nautical miles above the **Virginia Capes**, or "the **Capes**," which is a short way of referring to a line from Cape Charles Light to Cape Henry Light.

(14) **Chesapeake Light** (36°54'17"N., 75°42'46"W.), 117 feet above the water, is shown from a blue tower on a white superstructure on four piles, 14 miles eastward of Cape Henry. The name CHESAPEAKE is displayed on all sides. A sound signal and racon are at the light. A fish haven, consisting of sunken fishing-boat hulls and marked by private unlighted buoys, is about 0.4 mile southwestward of the light.

(15) **Cape Charles**, on the north side of the entrance, is low and bare, but the land back of it is high and wooded. **Wise Point** is the most southerly mainland tip of the cape. Low **Fishermans Island**, a National Wildlife Refuge, is 1 mile south of Wise Point.

(16) The southwest end of **Smith Island** is 2.4 miles eastward of Wise Point; the island is 6 miles long, low and sparsely wooded, and awash at half tide midway along its length.

(17) **Cape Charles Light** (37°07'23"N., 75°54'23"W.), 180 feet above the water, is shown from an octagonal, pyramidal skeleton tower, upper part black and lower part white, on the southwestern part of Smith Island. The ruins of the old lighthouse are in shallow water 0.7 mile eastward of the light.

(18) **Smith Island Shoal**, which breaks in heavy weather, has depths of 21 feet 7.5 miles east-southeast of Cape Charles Light. Depths less than 40 feet extend another 5 miles northeastward. Outer limits of the shoal area are marked by a lighted buoy.

(19) **Nautilus Shoal**, which extends 4 miles southeastward from Fishermans Island, has patches with depths of 6 to 11 feet. The buoyed channel along the southwest side of Nautilus Shoal, thence northward between Fishermans Island and **Inner Middle Ground**, had a controlling depth of about 16 feet in 1977-1980. The channel is used by local vessels drawing up to 12 feet. This channel is not recommended for strangers because of shifting shoals. In 1996, a 10-foot shoal was reported 1.5 miles S of Fishermans Island in about 37°03'31.2"N., 075°57'27.0"W.

(20) Breakers frequently occur along the axis of Inner Middle Ground, starting on the seaward side of the Chesapeake Bay Bridge-Tunnel and continuing the entire length of the shoal. This phenomenon appears to be associated with large swells rolling in from sea from the south-southeast to southeast.

Charts 12222, 12221, 12225

(21) **Cape Henry**, on the south side of the entrance, has a range of sand hills about 80 feet high.

(22) **Cape Henry Light** (36°55'35"N., 76°00'26"W.), 164 feet above the water, is shown from an octagonal, pyramidal tower, upper and lower half of each face alternately black and white, on the beach near the turn of the cape.

(23) The gray octagonal, pyramidal tower 110 yards southwest of Cape Henry Light is the abandoned 1791 lighthouse.

Local magnetic disturbance

(24) 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.

(25) A **naval restricted area** extends northward and eastward from Cape Henry. (See **334.320**, chapter 2, for limits and regulations.)

(26) The summer resort of **Virginia Beach** is about 5 miles southward of Cape Henry Light. Many high-rise buildings, two water tanks, and an aerobeacon 2.8 miles inland are prominent. A hotel cupola, 3.4 miles south of Cape Henry Light, is distinctive.

(27) The **Chesapeake Bay Bridge-Tunnel** extends from Cape Charles across the bay entrance to a point 6 miles westward of Cape Henry. The 15-mile crossing has vehicular tunnels under Chesapeake Channel and Thimble Shoal Channel with fixed bridges over Fishermans Inlet and secondary channels. In addition to the channel buoys and lights, daybeacons and sound signals mark the openings at Chesapeake and Thimble Shoal Channels. At night the floodlighted tunnel houses are more

prominent than the privately maintained lights marking the channels.

(28) **Caution**.–The Chesapeake Bay Bridge-Tunnel complex has on several occasions suffered damage from vessels. In every case, adverse weather prevailed with accompanying strong winds from the northwest quadrant generally related to a frontal system. Weather deterioration in the lower bay is quite often sudden and violent and constitutes an extreme hazard to vessels operating or anchoring in this area. The proximity of the bridge-tunnel complex to main shipping channels and anchorages adds to the danger. Currents in excess of 3.0 knots can be expected in the area.

(29) Normal precautions dictated by prudent seamanship are expected of all vessels. Mariners transiting this area are, however, urged to be particularly alert in regards to the weather. To assist in this respect, the National Weather Service provides 24-hour weather broadcasting on 162.55 MHz. The local Marine Operator also transmits weather information at 0000, 0600, 1200, and 1800 local time on 2450 kHz and 2538 kHz. Information of a pending weather frontal passage should be met with advance preparations. Engines readied for short notice maneuvering and anchor details alerted are considered minimum prudent precautions. Maneuvering in close proximity of the bridge-tunnel complex is also discouraged.

(30) A **Regulated Navigation Area** has been established in the waters of the Atlantic Ocean and in Chesapeake Bay. (See **165.1 through 165.13, and 165.501**, chapter 2, for limits and regulations.)

(31) All vessels 300 gross tons and over, including tug and barge combined are required to obtain permission prior to entering, departing, and/or moving within the Regulation Navigation Area. To obtain permission, vessels shall contact the Joint Harbor Operations Center (JHOC) at least 30 minutes prior to entry or movement via channel 12, alternate 13/16 VHF-FM and relay vessel documentation number, IMO number or VIN for verification. This includes entries from offshore, James River, Chesapeake Bay or Intracoastal Waterway. Alternate JHOC phone numbers are 757-444-5210/5209. If the JHOC cannot be reached, the Captain of the Port (COTP) Command Duty Officer may be reached at 757-668-5555.

Traffic Separation Schemes

(32) **Traffic Separation Schemes (Chesapeake Bay Entrance and Smith Point)** have been established for the control of maritime traffic at the entrance of Chesapeake Bay and off Smith Point Light (37°52'47"N., 76°11'01"W.). They have been designed to aid in the prevention of collisions, but are not intended in any way to supersede or alter the applicable Navigation Rules (See **167.1 through 167.15 and 167.200 through 167.203**, chapter 2, for limits and regulations and Traffic Separation Schemes, chapter 1, for additional information.)

Traffic Separation Scheme (Chesapeake Bay Entrance)

(33) The scheme provides for inbound-outbound traffic lanes to enter or depart Chesapeake Bay from the northeastward and from the southeastward. (See chart 12221.)

(34) A precautionary area with a radius of 2 miles is centered on Chesapeake Bay Entrance Lighted Whistle Buoy CH (36°56'08"N., 75°57'27"W.). A racon is at the buoy.

(35) The northeasterly inbound-outbound traffic lanes are separated by a line of four fairway buoys on bearing 250°–070°. The outermost buoy in the line is 6.4 miles 313° from Chesapeake Light and the innermost buoy is 4.5 miles 074° from Cape Henry Light.

(36) The southeasterly approach is marked by Chesapeake Bay Southern Approach Lighted Whistle Buoy CB (36°49'00"N., 75°45'36"W.). A racon is on the buoy. The inbound/outbound traffic lanes are separated by a **Deep-Water Route** marked by lighted buoys on bearings 302°-122° and 317°-137°. The Deep-Water Route is intended for deep draft vessels and naval aircraft carriers entering or departing Chesapeake Bay. A vessel using the Deep-Water Route is advised to announce its intentions on VHF-FM channel 16 as it approaches Lighted Whistle Buoy CB on the south end, and Lighted Whistle Buoy CH on the north end of the route. All other vessels approaching the Chesapeake Bay Traffic Separation Scheme should use the appropriate inbound/outbound lanes of the northeasterly or southeasterly approaches.

(37) The Coast Guard advises that upon entering the traffic lanes, all inbound vessels are encouraged to make a security broadcast on VHF-FM channel 13, announcing the vessel's name, location, and intentions.

(38) **Exercise extreme caution where the two routes converge off Cape Henry**. Mariners are also warned that vessels may be maneuvering in the pilotage area which extends into the western part of the precautionary area.

Traffic Separation Scheme (Smith Point)

(39) The turn in the main channel in Chesapeake Bay off Smith Point is marked by a fairway buoy 1.5 miles 090° from Smith Point Light. Northbound traffic will pass eastward of the buoy, and southbound traffic will pass westward of the buoy.

Channels

(40) The deepest route to and from Chesapeake Bay is south of Chesapeake Light through the buoyed Deep-Water Route in the southeasterly approach. Federal project main channel depths are 50 feet from the Virginia Capes to Baltimore and 55 feet from the Capes to Hampton Roads. (See Notice to Mariners and latest editions of charts for controlling depths.)

(41) The well-marked channel to Baltimore is discussed further in chapters 11 to 15.

Currents

(42) The current velocity is 1.0 knot on the flood and 1.5 knots on the ebb in Chesapeake Bay Entrance. (See the Tidal Current Tables for daily predictions.)

Pilotage, Chesapeake Bay

(43) 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 under enrollment in the coastwise trade if they have on board a pilot licensed by the Federal Government to operate in these waters.

(44) The Association of Maryland Pilots has an office in Baltimore (telephone: 410-342-6013, fax: 410-276-1364, telex: 87-574 MARPILOTS BALTIMORE, cable address: MARPILOT BALTIMORE). They provide service to any port in Maryland and service between Cape Henry, VA, to Baltimore. Transmit ETA 24 hours and 6 hours before arrival pilot station. Email ETA, speed, and draft to: dispatch@mdpilots.com. The Virginia Pilots Association has an office in Norfolk (757-496-0995; cable address VAPILOT) and provides service to any port in Virginia. Vessels bound for Washington, dc may take a pilot from either association.

(45) The Maryland pilots maintain a Pilot Tower with the Virginia pilots at Cape Henry, just north of Cape Henry Light. The pilots monitor VHF-FM channels 11, 13, and 16. The pilot boats are stationed in Lynnhaven Inlet. They are 45 feet long with a black hull and white house displaying the "PILOT" on each side.

(46) The Virginia Pilots Association maintains a pilot station at Cape Henry, just north of Cape Henry Light. The pilots monitor VHF-FM channels 11, 16, and 74. Other channels are used on request. Email address: DISPATCH@PILOT.INFI.NET. Four pilot boats are stationed in Lynnhaven Inlet; two are in use at any given time. The pilot boats are 50 feet long with orange hulls and gray houses with the word "PILOT" on each side.

(47) The Chesapeake and Interstate Pilots Association offers pilot services to vessels engaged in the coastwise trade and public vessels between Cape Henry and various ports and places on the Chesapeake Bay and its tributaries. Arrangements for pilots are made through ships' agents or the pilot office in Norfolk (telephone: 757-855-2733). The pilots board from the pilot boat Chesapeake, which is 41 feet long, gray hull with white superstructure and the word "PILOT" on the side. Pilot ladders are recommended to be rigged 4 feet above the water on the leeward side. The pilot vessel monitors VHF-FM channels 13 and 16, 90 minutes prior to the last ETA received. Cellular confirmation of arrival is recommended if radio contact is not successful.

(48) Vessels are boarded in the Pilot boarding area off Cape Henry.

(49) It has been noted that sometimes considerable differences occur between a vessel's ETA and her actual arrival due to conditions encountered between Cape Hatteras and Cape Henry. Revisions to the ETA of 1 hour or greater should be passed to the pilots especially if the vessel's arrival will be sooner than previously advised.

Underkeel clearance policy, Hampton Roads

(50) In consultation with waterway users, and in accordance with **33 CFR 157** (in part, chapter 2). **Captain of the Port Hampton Roads** has established the following underkeel clearance policy for single hull tank vessels of 5,000 gross tons or more operating on the waters of the Captain of the Port Hampton Roads zone. Prior to transiting the Port of Hampton Roads, vessel masters are required to confer with their pilot regarding conditions which may affect underkeel clearance which include, but are not limited to; the vessel's navigational draft, controlling depth of the channels, weather, and environmental conditions. Masters of vessels not requiring pilotage are required to follow the regulations established in **33 CFR 157.455 (c)**, chapter 2. Masters and pilots of vessels which transit the port are required to exercise an appropriate "standard of care." As local waterway and shiphandling experts, pilots must continue to advise vessel transits. This underkeel clearance policy is but one of the items these professionals discuss when considering the transit and making a determination regarding the safe passage of a vessel. Certain intangibles, such as shoaling, weather or traffic, may cause this underkeel clearance to be modified. Ultimately, any grounding of a vessel is unacceptable. This includes intentional "loading to the bottom." Groundings are marine casualties and must be reported to the Captain of the Port promptly in accordance with **46 CFR 4.05–1(a)** (not covered in this text) regardless of whether they occur while underway, moored or anchored.

Charts 12254, 12222, 12256

(51) **Thimble Shoal Channel**, the improved approach to Hampton Roads, begins 2.3 miles northwest of Cape Henry Light and extends 9.5 miles west-northwestward; a Federal project provides for a 55-foot-deep channel with a 32-foot-deep auxiliary channel on each side of the main channel. (See Notice to Mariners and latest editions of the charts for controlling depths.)

(52) **Naval** and **general anchorages** are south of Thimble Shoal Channel. (See **110.1 and 110.168**, chapter 2, for limits and regulations.)

(53) Thimble Shoal Channel is a **Regulated Navigation Area** and draft limitations apply. A vessel drawing less than 25 feet may not enter the channel, unless the vessel is crossing the channel. (See **165.501**, chapter 2, for limits and regulations.)

(54) **Lynnhaven Roads**, an open bight westward of Cape Henry, is protected from southerly winds and is sometimes used as an anchorage. The former dumping-ground area in the western part of the bight has shoals and obstructions with depths as little as 11 feet;

elsewhere, general depths are 20 to 28 feet. Eastward of Lynnhaven Inlet, the 18-foot curve is no more than 0.3 mile from shore; westward of the inlet, the shoaling is gradual and depths of 18 feet can be found 0.8 mile from shore.

(55) There are two small-craft openings in the Chesapeake Bay Bridge-Tunnel south of Thimble Shoal Channel. Each fixed span has a clearance of 21 feet.

(56) **Lynnhaven Inlet,** 4 miles westward of Cape Henry Light, is subject to continual change. In 2008, the controlling depth in the entrance channel was 7.5 feet (9.1 feet at midchannel). The inlet is marked by lights, lighted buoys, and a buoy. The twin fixed bridges over the inlet have a clearance of 35 feet. Overhead power cables close southward of the bridges have clearances of 68 feet. **Lynnhaven Bay**, south of the inlet, has a large turning basin just south of the highway bridge over the inlet. The bay has depths of 1 to 10 feet.

(57) **Broad Bay** can be reached through a dredged channel eastward from the north end of the basin, and another dredged channel eastward from the south end of the basin; the southerly channel is marked by a light and daybeacons. The north and south channels coverage near Daybeacon 10, and continue eastward to Broad Bay. The channel to Broad Bay is marked by daybeacons; a light is at the east end of the dredged channel, in Broad Bay. In 2008, the controlling depth was 2.2 feet in the basin, thence 6.2 feet in the northerly channel and 4.2 feet in the southerly channel to Daybeacon 10, thence 3.4 feet in the channel eastward to Broad Bay. The Great Neck Road fixed highway bridge over the channel 1.2 miles from the twin bridges over the inlet has a clearance of 35 feet; nearby overhead power and telephone cables have a clearance of 55 feet. Twin fixed highway bridges with a 36-foot clearance are about 0.1 mile east of the Great Neck Road bridge.

(58) **Caution**.–It is reported that this channel has very heavy boat traffic and is especially congested on summer weekends.

(59) An alternate route to Broad Bay is through **Long Creek** which branches northeastward from the dredged channel in the vicinity of Daybeacon BL. In 2006, the controlling depth in Long Creek was 5 feet to Broad Bay. The 40-foot span of the Great Neck Road Bridge over Long Creek has a clearance of 20 feet. Nearby overhead cables have a clearance of 37 feet.

(60) Depths in Broad Bay are about 6 to 7 feet. A marked channel with a dredged section leads southeastward through **The Narrows** to the southern end of **Linkhorn Bay** near Virginia Beach. In 2008, the controlling depth was 6 feet to head of the project at the northern entrance to Linkhorn Bay.

(61) Small-craft facilities are along the dredged channel from Lynnhaven inlet to Broad Bay, in Long Creek and the east fork of Linkhorn Bay.

(62) **Little Creek** is entered between jetties 8 miles westward of Cape Henry Light. Most of the creek comprises the **U.S. Naval Amphibious Base,** but the Virginia and Maryland Railroad operates car floats from the south end terminal to the town of Cape Charles on the Delmarva Peninsula; small craft use the west arm.

(63) A dredged channel in Little Creek leads to a basin off the railroad terminal, 1.2 miles south of the jetties. In 2009, the controlling depth in the channel and basin was 20 feet. The channel is marked by a **177°30'** lighted entrance range and by lights. **Little Creek Coast Guard Station** is eastward of the railroad terminal.

(64) **Fishermans Cove**, on the west side of Little Creek, has fuel and berthing facilities for small craft. A **speed limit** of 5 knots is prescribed for Fishermans Cove.

(65) Naval **danger zones** and **restricted areas** extend northward from the vicinity of Little Creek to the edge of Thimble Shoal Channel. (See **334.310** and **334.370**, chapter 2, for limits and regulations.)

Chart 12245

(66) **Hampton Roads**, at the southwest corner of Chesapeake Bay, is entered 16 miles westward of the Virginia Capes. It includes the Port of Norfolk, encompassing the cities of Norfolk, Portsmouth, and Chesapeake, and the Port of Newport News, which takes in the cities of Newport News and Hampton.

(67) Hampton Roads is the world's foremost bulk cargo harbor. Coal, petroleum products, grain, sand and gravel, tobacco, and fertilizer constitute more than 90 percent of the heavy traffic movement by water, although an increasing amount of general cargo is handled by the Hampton Roads ports.

Channels

(68) The approach to Hampton Roads is through the 55-foot Thimble Shoal Channel. There are natural depths of 80 to 20 feet in the main part of Hampton Roads, but the harbor shoals to less than 10 feet toward the shores. Dredged channels lead to the principal ports.

(69) Two main Federal project channels, marked by buoys, lead through Hampton Roads. One channel leads southward along the waterfronts of Norfolk, Portsmouth, and Chesapeake to the first bridge across the Southern Branch of Elizabeth River; project depths are 50 feet through Norfolk Harbor Entrance Reach; thence 55 feet through Craney Island Reach at Lamberts Point; thence 40 feet to the bridge. Newport News Channel, with a 55-foot project depth leads westward to the waterfront at Newport News at the entrance to James River. (See Notice to Mariners and latest editions of the charts for controlling depths.)

Anchorages

(70) Numerous general, explosives, naval, and small-craft anchorages are in Hampton Roads and Elizabeth River. (See **110.1 and 110.168**, chapter 2, for limits and regulations.) The areas are shown on charts 12245 and 12253.

(71) The Newport News to Craney Island pipeline is a 24-inch diameter submerged pipeline carrying natural gas and was completed in 2009. The method of construction involved directional drilling from five locations along the length of the pipeline termed "Stitch Points", labeled A through E on charts 12245 and 12222.

(72) From the shoreline in Newport News, the initial section of pipeline runs 65 feet below the seabed, rising to 6 feet below the seabed at

(73) Stitch Point A (36°58'23.9"N., 76°23'42.1"W.); thence 6 feet below the seabed to

(74) Stitch Point B (36°57'34.7"N., 76°23'28.8"W.); thence 20 feet below the seabed where it crosses the ship channel, rising to 10 feet below the seabed at

(75) Stitch Point C (36°57'04.0"N., 76°23'20.4"W.); thence 65 feet below the seabed, rising to 10 feet below the seabed at

(76) Stitch Point D (36°56'33.1"N., 76°23'12.0"W.); thence 65 feet below the seabed, rising to 10 feet below the seabed at

(77) Stitch Point E (36°55'55.7"N., 76°23'09.4"W.); thence 20 feet below the seabed to the shoreline at Craney Island.

Currents

(78) Information for several places in Hampton Roads and Elizabeth River is given in the Tidal Current Tables. The currents are influenced considerably by the winds and at times attain velocities in excess of the tabulated values. The current velocity is about 1.0 knot in Hampton Roads and about 0.6 knot in Elizabeth River.

Ice

(79) Hampton Roads is free of ice. In severe winters the upper part of Southern Branch, Elizabeth River, is sometimes closed for short periods.

Weather

(80) The National Weather Service maintains an office at Norfolk International Airport; **barometers** in the Hampton Roads area can be compared there or checked by telephone.

Pilotage

(81) **Pilotage** for Hampton Roads ports. (See Pilotage at the beginning of this chapter and chapter 3.)

Towage

(82) Vessels usually proceed from Cape Henry to points in the Hampton Roads port area under their own power and without assistance. A large fleet of tugs is available at Norfolk and Newport News to assist in docking or undocking and in shifting within the harbor.

Quarantine, customs, immigration, and agricultural quarantine

(83) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(84) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) The **quarantine anchorage** is southeastward of York Spit Channel Lighted Buoy 38.

(85) Hampton Roads is a **customs port of entry**.

Coast Guard

(86) A **Marine Safety Office** is in Norfolk. (See Appendix A for address.) (See **Captain of the Port underkeel clearance policy**, covered earlier in this chapter.)

Harbor regulations

(87) Port regulations are principally concerned with grain, coal handling, port charges, and pilotage and stevedoring rates. Copies of these regulations may be obtained from the Hampton Roads Maritime Association, 236 East Plume Street, P.O. Box 3528, Norfolk, VA 23514.

(88) **Anchorage regulations** are given in **110.1 and 110.168**,chapter 2.

Wharves

(89) The Hampton Roads area has more than 200 piers and wharves along more than 30 miles of improved waterfront; only the major deepwater facilities are described. Included are coal piers; containerized-cargo berths; oil storage and bunkering facilities; general-cargo, grain, and ore piers; and marine railways and drydocks. Available depths are 22 to 42 feet at the general-cargo, ore, and grain piers; 36 to 45 feet at the coal piers; and 20 to 42 feet at the oil-storage and bunkering facilities. A 350-ton floating crane is available.

Supplies

(90) The principal coal-handling and bunkering piers are those of the Norfolk Southern Railway at Lamberts Point, Norfolk, and of the Chesapeake and Ohio Railway at Newport News. Bunker oil is available at Sewells Point, in Southern Branch of Elizabeth River, and at Newport News, or it can be delivered from barges in the stream. Freshwater is available on the principal piers and can be supplied from barges. The area also has numerous ship chandlers and marine suppliers.

Repairs

(91) Hampton Roads has extensive facilities for drydocking and making major repairs to large deep-draft vessels. The largest floating drydock at Norfolk has a capacity of 54,000 tons, and the largest marine railway can handle 6,000 tons. The shipyard at Newport News is one of the largest and best equipped in the United States; the principal graving dock has a length of 1,600 feet on the keel blocks. There are many other yards that are

especially equipped to handle medium-sized and small vessels. More details on these repair facilities are given with the discussion of the waterway or port in which they are located.

Small-craft facilities

(92) Complete services and repairs are available at Hampton Roads ports. There are marine railways up to 11 tons and mobile hoists up to 80 tons for repairs. (See small-craft facilities tabulations on charts 12205 and 12206 for services and supplies available.)

Communications

(93) Hampton Roads ports are served by a terminal beltline, several large railroads, and by more than 50 motor carriers. In addition, over 90 steamship lines connect Hampton Roads with the principal U.S. and foreign ports; most of the lines have regular sailings, and others maintain frequent but irregular service. Three airlines offer prompt airfreight, express, and passenger service from Norfolk and Newport News to major U.S. cities with connecting service overseas.

(94) **Thimble Shoal Light** (37°00'52"N., 76°14'23"W.), 55 feet above the water, is shown from a red conical tower on a brown cylindrical pier on the eastern edge of the shoal. The light is 12.3 miles from the Virginia Capes. Thimble Shoal is the southern edge of **Horseshoe**, described in chapter 11.

(95) The entrance to Hampton Roads is between Willoughby Spit and Old Point Comfort, 2 miles to the northward.

(96) A **bridge-tunnel complex** crosses Chesapeake Bay from Willoughby Spit to Hampton.

(97) **Old Point Comfort** is the site of historic **Fort Monroe**. The Chamberlin Hotel is an excellent landmark. **Old Point Comfort Light** (37°00'06"N., 76°18'23"W.), 54 feet above the water, is shown from a white tower. Only Government craft can tie up at the wharf on the south waterfront of Old Point Comfort.

(98) A naval **restricted area** extends eastward and southward of Old Point Comfort, and a **danger zone** of an army firing range extends to seaward from a point 1.5 miles northward of the point. (See **334.350**, and **334.360**, chapter 2, respectively, for limits and regulations.)

(99) **Hampton Bar** begins about 200 yards southwestward of Old Point Comfort and extends 2 miles southwestward; depths on the bar are 2 to 6 feet. The bar is marked by two lights and by a buoy and daybeacon along its southern edge. These lights, together with one on Hampton Flats, aid vessels in mooring in the naval and other anchorages northward of the main channel.

(100) A dredged channel, marked by a light and daybeacons, leads along the west side of Old Point Comfort to the fish wharves at **Phoebus** and has a federal project depth of 12 feet. (See Notice to Mariners and latest edition of the charts for controlling depths.) The wharves have depths of 8 to 12 feet at their outer ends, but are in poor condition. Small craft can anchor in depths of 8 to 20 feet along the sides of the channel. The Fort Monroe yacht piers are on the east side of the channel 0.4 mile above Old Point Comfort.

(101) **Hampton River**, 1.5 miles westward of Old Point Comfort, is entered by a marked channel through Hampton Bar and Flats to a point just below the highway bridge at Hampton. Federal project depths are 12 feet. (See Notice to Mariners and latest edition of the charts for controlling depths.) Some small craft also enter west of Hampton Bar. **Hampton**, on the west side of the river 2 miles above the channel entrance, is an important seafood center. Traffic on the river consists of seafood and petroleum products, sand and gravel, and building materials. The residential and commercial areas of Hampton are on the west side of Hampton River; **Hampton Institute** and a Veterans Hospital are on the east side.

(102) **Sunset Creek**, on the west side just above the Hampton River mouth, is entered by a marked dredged channel leading westward from the channel in the river and has a federal project of 12 feet. (See Notice to Mariners and latest editions of the charts for controlling depths.)

(103) The principal commercial wharves at Hampton, just below the bridge, have depths of 7 to 12 feet at their faces. The public landing 500 yards below the bridge has depths of 8 feet at the face; small boats anchor between the public landing and the bridge. The wharves along Sunset Creek have depths of 4 to 9 feet at their outer ends.

(104) Marine supplies, gasoline, diesel fuel, and a pump-out station are available at Hampton. A yacht club and several marinas here have berthing space. Repairs can be made; largest marine railway, 120 feet; lift, 35 tons.

(105) **Jones Creek**, on the east side of Hampton River 300 yards above the mouth, has depths of 8 to 11 feet. The bulkheads have depths of 3 to 10 feet alongside and are controlled by the Veterans Hospital on the south and Hampton Institute on the north.

(106) The 55-foot project channel to Newport News was discussed earlier. Depths along the edges of the dredged section are 19 to 25 feet. The currents do not always set fair with the channel, especially with strong winds, and deep-draft vessels sometimes find it difficult to stay in the channel.

(107) **Newport News Middle Ground Light** (36°56'43"N., 76°23'29"W.), 52 feet above the water, is shown from a red conical tower on a red cylindrical pier in 15 feet of water near the western end of the shoal.

(108) **Newport News Point** (36°57.8'N., 76°24.7'W.) on the north side of the entrance to James River, is 21.5 miles from the Virginia Capes. The city of **Newport News** extends several miles along the northeast bank of James River.

(109) **Newport News Creek**, just west of Newport News Point is a city-owned small-boat harbor used by fishing boats, pleasure craft and petroleum barges. In 2010, the controlling depth was 11 feet (12 feet at midchannel)

in the dredged channel to the head of the project. Vessels entering the creek should not cut between Buoy 1 and the bridge-tunnel interchange as the bridge-tunnel interchange is surrounded by shoal riprap. In 2007, a rocky bottom with a depth of 6 feet was reported just SSE of Newport News Point at 36°57'30"N., 76°24'37"W.; caution is advised. Fuel, supplies, and slips are available, and repairs can be made. A 75-ton marine railway and a 40-ton mobile hoist are available.

(110) Newport News Shipbuilding and Drydock Company is just below the James River Bridge on the east side of the river. A security zone is along the waterfront of the company property. (See **165.30, 165.33 and 165.504**, chapter 2, for limits and regulations.)

Wharves

(111) The deepwater piers and wharves at Newport News extend from Newport News Point for 2.5 miles up James River. Only the major facilities are described. All have access to highways and railroads, freshwater connections, and electric shore-power connections. Unless otherwise indicated, these facilities are owned by the Virginia Ports Authority. The alongside depths given for each facility described are reported depths. (For information on the latest depths, contact the operator.) For a complete description of the port facilities at Newport News, refer to Port Series No. 11, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

Chart 12245

(112) **Newport News Marine Terminal Pier B** (36°58'19"N., 76°26'02"W.) 543-foot face, 811 feet on upper side; 620 feet lower side; 36 to 40 feet alongside; deck height, 15 feet; 267,900 square feet covered storage; 60 acres of open storage; receipt and shipment of conventional, containerized, and roll-on/roll-off general cargo; operated by Virginia International Terminals, Inc.

(113) **Newport News Marine Terminal Pier C:** about 150 yards southeastward of Newport News Marine Terminal Pier B; 552-foot face, 935 feet on upper and lower sides; 40 feet alongside; deck height, 14 feet; 123,000 square feet covered storage; 182-ton capacity container crane; receipt and shipment of conventional, containerized, and roll-on/roll- off general cargo and heavy-lift items; operated by Virginia International Terminals, Inc.

(114) **Kinder Morgan Bulk Terminals, Pier 1X:** about 200 yards southeastward of Pier C; upper and lower sides 875 feet; 43 to 50 feet alongside; deck height, 11.8 feet; traveling gantry coal loader, belt-conveyor system with loading rate of 8,000 tons per hour; traveling gantry bulk-cement unloader, belt-conveyor system with unloading rate 880 tons per hour; receipt of cement and shipment of coal; owned by Ziegler Coal Handling Co. and operated by Pier IX Terminal Co., Division of Ziegler Coal Handling Co.

(115) **Dominion Terminal Associates, Pier No. 11** (36°57'48"N., 76°25'23"W.): about 800 yards southeastward of Pier IX; upper and lower sides 1,044 feet long; 50 feet alongside; deck height, 13 feet; traveling gantry coal loader, belt conveyor system with loading rate of 6,500 tons per hour, shipment of coal; owned and operated by dominion Terminal Associates.

(116) **Jerry O. Talton, Pier 14** (36°57'40"N., 76°25'12"W.): upper and lower sides 1,090 feet long; 40-45 feet alongside; deck height, 11.5 feet; twelve 50-ton diesel, mobile cranes; receipt and shipment of containerized general cargo and military equipment, mooring of transient vessels; owned by CSX Real Property, Inc. and operated by Jerry O. Talton, Inc. and Island Expeditors.

(117) **Jerry O. Talton, Pier No 15:** eastward of Jerry O. Talton, Pier No. 14; upper and lower sides 1,000 feet long; 35 to 42 feet alongside; deck height, 9.5 feet; ships tackle and rental lift gear as required for military cargo; receipt and shipment of containerized general cargo and military equipment; owned by CSX Real Property, Inc. and operated by Jerry O. Talton, Inc. and Island Expeditors.

(118) **Koch Materials Co., Newport News Tanker and Barge Docks:** about 200 yards eastward of Jerry O. Talton, Pier No. 15; offshore dock, 203.5 feet with platforms; 35 feet alongside; deck height, 13 feet; inshore dock, 210 feet upper face; 180 feet lower face; depths 16 to 27 feet alongside; deck heights, 12.6 feet and 14.6 feet; receipt and shipment of asphalt; owned and operated by Koch Materials Co.

(119) The facilities of the Newport News Shipbuilding and Drydock Co. begin 1.7 miles northwest of Newport News Point and extend 2 miles upriver. The company operates four outfitting piers equipped with cranes, largest capacity 80 tons; 2 drydocks, largest 640 feet long, 30 feet alongside; three graving docks, largest 1,670 feet long, 40 feet alongside with cranes of 990- and 310-ton capacity; two inclining shipways with lengths to 60 feet; floating cranes up to 67-ton capacity available.

(120) **Willoughby Spit**, on the south side of the entrance to Hampton Roads, is a narrow barrier beach 1.3 miles long in an east-west direction. About midway between the spit and Old Point Comfort, on the opposite side of the entrance, is **Fort Wool**, which is on the south edge of the main ship channel; a light is shown from a small gray house on the north side of the island.

(121) The 45-foot-wide small-boat openings in the south approach bridge to Hampton Roads Tunnel have clearances of 10 feet.

(122) **Willoughby Bank**, with depths of 3 to 7 feet, extends east-northeastward along the edge of the main channel for about 2.5 miles from Fort Wool.

(123) **Willoughby Bay**, on the inner side of Willoughby Spit, has general depths of 7 to 12 feet. On the south side of the bay are the prominent buildings of the Norfolk Naval Base and the Naval Air Station. A marked channel with a Federal project depth of 10 feet, 0.4 mile westward of Fort Wool, leads to a small-boat harbor behind

the hook of Willoughby Spit. (See Notice to Mariners and latest editions of the charts for controlling depths.) Some supplies, fuel, and berthing are available. Repairs can be made; largest marine railway, 40 feet.

(124) The western and southern part of Willoughby Bay is a **restricted area**. (See **334.300**, chapter 2, for limits and regulations.) The northern part of the bay is a **small-craft anchorage**. (See **110.1 and 110.168 (f) and (h)**, chapter 2, for limits and regulations.)

(125) A fixed highway bridge with a clearance of 25 feet crosses the yacht anchorage in the northern part of Willoughby Bay.

Charts 12245, 12253

(126) **Norfolk Harbor** comprises a portion of the southern and eastern shores of Hampton Roads and both shores of **Elizabeth River** and its Eastern, Southern, and Western Branches, on which the cities of Norfolk, Portsmouth, and Chesapeake are located.

(127) The harbor extends from off Sewells Point south in Elizabeth River to the seventh bridge over Southern Branch, a distance of 15 miles; it extends 1.5 miles up Western Branch to a point 0.5 mile above the West Norfolk highway bridge, and up Eastern Branch for 2.5 miles to the Norfolk Southern Railway bridge.

(128) The main part of Norfolk is on the east side of Elizabeth River north of Eastern Branch, with Berkley, a subdivision, to the southward between Eastern and Southern Branches. South of Berkley is the city of Chesapeake. Portsmouth is opposite Norfolk, and its waterfront extends along the west shore of Southern Branch and the south shore of Western Branch. These cities form practically a single community, united by the same commercial interests and served by the same ship channel.

(129) A **safety zone** is in effect in the Elizabeth River when a naval aircraft carrier transits the river to or from the Norfolk Naval Shipyard. (See **334.290**, chapter 2, for limits and regulations.)

Weather

(130) Norfolk, located in extreme southeastern Virginia, has an average elevation of 13 feet (3.96 m) above sea level and almost surrounded by water, has a modified marine climate. The city's geographic position with respect to the principal storm tracks is especially favorable, being south of the average path of storms originating in the higher latitudes and north of the usual track of hurricanes and other tropical storms. These features combine to place Norfolk in one of the favored climatic regions of the world. The winters are mild, while autumn and spring seasons usually are delightful. Summers, though warm and long, frequently are tempered by cool periods, often associated with northeasterly winds off the Atlantic. Temperatures of 100°F (37.8°C) or higher are very infrequent. Cold waves seldom penetrate to this area.

(131) The average temperature at Norfolk is 60.1°F (15.6°C). The average daily extremes are 68.5°F (20.3°C) and 51.2°F (10.7°C). January is the coolest month with an average temperature of 40.5°F (4.7°C) while July is the warmest month with an average temperature of 79.4°F (26.3°C). The warmest temperature on record is 104°F (40°C) recorded in August 1980 and the coolest temperature on record is -3°F (-19.4°C) recorded in January 1985. Each month, October through April, has recorded temperatures below freezing (0°C) while each month, May through August has seen temperatures in excess of 100°F (37.8°C). The average date of the last freezing temperature in the spring is March 23, while the average date of the first in autumn is November 18.

(132) The average annual precipitation of Norfolk is 44.83 inches (113.9 mm). Precipitation is uniformly distributed throughout the year except for a noticeable peak in July and August. November is the driest month averaging only 3 inches (76.2 mm) while, thanks to convective activity, August is the wettest month averaging 5.27 inches (133.9 mm). The greatest 24-hour precipitation was 7.41 inches (188.2 mm) which fell in August 1964.

(133) Occasional winters pass without a measurable amount of snowfall and when snow does occur, it generally occurs in light falls, which usually melt and disappear within 24 hours. Overall, snowfall is light and averages only 8 inches (203.2 mm) each year and has occurred in each month, November through April. The biggest 24-hour snowfall occurred when 13.6 inches (345.4 mm) fell in February 1989. (See Appendix B for **Norfolk climatological table**.)

(134) Twenty-one tropical cyclones have come within 50 miles (80.5 km) of Norfolk since 1950. Oddly enough, the approach has been made from all quadrants including from the north. Due mainly to geographic location, no direct hit by a hurricane has occurred since 1950.

Chart 12245

(135) **Sewells Point** (36°57.8'N., 76°19.6'W.), on the east side of the entrance to Elizabeth River, is 18 miles from the Virginia Capes. A breakwater, marked by a light on its outer end, extends about 0.3 mile westward from the point. The piers of the **Norfolk Naval Base** and its annex extend southward from the breakwater along the east bank of the river. General depths at the naval piers are 30 to 50 feet. A jettied basin at the naval base, 0.6 mile south of Sewells Point, affords protection for navy service craft in depths of 21 to 29 feet.

(136) **Sewells Point Spit**, covered 3 to 6 feet, extends north-northeastward from the point for 1.4 miles to the outer end of Willoughby Channel.

(137) A channel, marked by lights and daybeacons, extends eastward and southward through Sewells Point

Spit for about 1.2 miles to an enclosed boat basin used by small navy boats. In 1988, the channel had a controlling depth of 9.5 feet; depths of 7 to 10 feet were available in the basin.

(138) The approach to the naval piers is a **restricted area**. (See **334.300(b)(1)**, chapter 2, for limits and regulations.)

Wharves

(139) Norfolk Harbor has numerous wharves and piers of all types, the majority of which are privately owned and operated; only the major deepwater facilities are described. These facilities are southward of Sewells Point, between the Norfolk Naval Base and Tanner Point; on Lamberts Point; on Pinner Point; and on Eastern Branch and Southern Branch of Elizabeth River. All have freshwater connections and access to highways and railroads, and most have electrical shore-power connections. 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.) For a complete description of the wharves and piers in Norfolk Harbor refer to Port Series No. 11, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.)

Facilities southward of Sewells Point, between Norfolk Naval Base and Tanner Point (chart 12245):

(140) **Lehigh Cement Co.; Norfolk Terminal Pier** (36°55'48"N., 76°19'53"W.): 40-foot face, 224 feet with dolphins; 29 feet alongside; deck height, 11 feet; 32,900-ton storage capacity; unloading rate 40 tons per hour, receipt of bulk cement; owned and operated by Lehigh Cement Co.

(141) **Norfolk International Terminals:** 751,000 square feet covered storage; 120 positions for refrigerated containers; deck height, 9 feet; receipt and shipment of roll-on/roll-off conventional and general cargo; owned by Virginia Port Authority and operated by Virginia Port Authority and operated by Norfolk International Terminals, Inc.

(142) Pier 3 (36°55'53"N., 76°20'01"W.): 498-foot face; 36 feet alongside; north side 1,211 feet long, 36 feet alongside; south side 1,193 feet long, 36 alongside; deck height, 9.5 feet; 100,000 cubic feet cold storage; rental cranes, heavy lift derrick and forklifts are available.

(143) North Expansion, Berth 1 (36°55'32"N., 76°19'46"W.): 1,500-foot face; 41 feet alongside; three 40-ton traveling container cranes.

(144) North Berth (36°55'10"N., 76°19'42"W.): 900-foot face; 32 feet alongside; roll-on/roll-off berth.

(145) Pier 2 (36°55'03"N., 76°19'57"W.): 334-foot face; north and south sides 1,328 feet long; 32 feet along north side, 30 feet along south side.

(146) Pier 1 (36°54'55"N., 76°19'56"W.): 308-foot face; north and south sides 1,320 long; 32 feet along north side, 30 feet along south side.

(147) Container Berths 1, 2, 3, and 4: immediately southward of Pier 1; Berth 1 face 750 feet, Berth 2 face 830 feet, Berth 3 face 1,100 feet, Berth 4 face 1,550 feet; 36 to 41 feet alongside; 40 and 50-ton container cranes.

Facilities at Lamberts Point (chart 12253):

(148) **Norfolk Southern Railway Co. Piers:** owned by Norfolk Southern Corp. and operated by Norfolk Southern Railway Co.; shipment of coal.

(149) Pier 6 (36°52'47"N., 76°19'56"W.): 88-foot face; north side 1,850 feet, 53 feet alongside; south side 1,600 feet, 53 feet alongside; deck height, 11 feet; two electric coal-loading towers, loading rate 16,000 tons per hour on north side of pier.

(150) Pier 5: about 200 yards southward of Pier 6; 74-foot face; north side, 980 feet, south side, 1000 feet; 36 feet alongside; deck height, 11 feet.

(151) Lambert's Point Docks, Piers N, L, and P: 646,000 square feet covered storage; 24,000 cubic feet cold storage space; fumigation chambers; storage tanks totaling 3.2-million gallon capacity; forklift trucks and other portable mechanized cargo-handling equipment; cranes up to 50-ton capacity; receipt and shipment of general, conventional, containerized, roll-on/roll-off cargo, animal and vegetable oils, and latex; receipt of glyoxal and latex; owned by Norfolk Southern Corp. and operated by Lambert's Point Docks, Inc. and Norfolk Oil Transit, Inc.

(152) Pier N (36°51'57"N., 76°19'11"W.): 390-foot face, north and south sides 1,100 feet long, 32 feet alongside; deck height, 10.8 feet.

(153) Pier L: about 200 yards southward of Pier N; 183-foot face; south side 755 feet, 32 feet alongside; deck height, 9 feet.

(154) Pier P: about 600 yards southeastward of Pier N; 398-foot face; north and south sides 1,196 feet long; 32 feet alongside; deck height, 11 feet.

Facilities at Port Norfolk (chart 12253):

(155) **Portsmouth Marine Terminal Wharf** (36°51'26"N., 76°19'33"W.): 3,535-foot face; 40 feet alongside; deck height, 12 feet; 50,000 square feet covered storage; 199 acres open storage; cranes to 110 tons; container cranes to 40 tons; fumigation chambers receipt and shipment of general, containerized and roll-on/roll-off cargo; receipt of automobiles; shipment of tobacco; owned by Virginia Ports Authority and operated by Virginia International Terminals.

(156) **Sea-Land Portsmouth Terminal Wharf** (36°51'29"N., 76°19'06"W.): 1,000 foot-face; 38 feet alongside; deck height, 12 feet; open storage for 4,500 containers; receipt and shipment of general and containerized cargo; owned by Virginia Port Authority and operated by Universal Maritime Service Corp.

Facilities in Eastern Branch of Elizabeth River (chart 12253):

(157) **Allied Terminals, Norfolk Terminal Wharf and Mooring** (36°50'20"N., 76°16'20"W.): 50-foot wharf face with 625 feet of berthing space; 25 feet alongside; deck height, 9 feet; storage tanks, 50,000-barrel capacity; receipt of asphalt, liquid fertilizer, methanol, and caustic soda; owned and operated by Allied Terminals, Inc., Subsidiary of Allied Marine Industries, Inc.

Facilities in Southern Branch of Elizabeth River, Berkley, Chesapeake, and Portsmouth (chart 12253):

(158) **United States Gypsum Co., Norfolk Wharf** (36°49'18"N., 76°17'22"W.): 40-foot face, 645 feet berthing space; 32 feet alongside; deck height, 10 feet; storage shed, 47,000-ton capacity; open storage for 100,000 tons; receipt of gypsum rock; owned and operated by U. S. Gypsum Co.

(159) **Crown Central Petroleum Corp., Chesapeake Barge Dock** (36°49'15"N., 76°17'22"W.): 40-foot face, 145 feet with dolphins; 31 to 35 feet alongside; deck height, 6 feet; 214,300-barrel storage capacity; receipt and shipment of petroleum products; operated by Crown Central Petroleum Corp.

(160) **ExxonMobil Refining and Supply Co., Chesapeake Terminal, Barge Wharf** (36°49'13"N., 76°17'20"W.): two 25-foot faces, 335 feet with dolphins; 21 feet alongside; deck height, 10 feet; shipment and receipt of petroleum products, shared storage space with the adjoining tanker wharf, owned by ExxonMobil Oil Corp. and operated by ExxonMobil Refining and Supply Co.

(161) **ExxonMobil Refining and Supply Co. Chesapeake Terminal, Tanker Wharf** (36°49'08"N., 76°17'23"W.): 75-foot face, 540 feet with platforms; 35 feet alongside; deck height, 10 feet; receipt and shipment of petroleum products, bunkering vessels; 1,164,070-barrel storage facility, owned by ExxonMobil Oil Corp., and operated by ExxonMobil Refining and Supply Co.

(162) **Mid-Atlantic Terminals, Chesapeake Wharf** (36°48'59"N., 76°17'22"W.): 735-foot face, 40 feet alongside; deck height, 12 feet; storage for 45,000 short tons of wood chips, receipt and shipment of wood chips and other dry bulk cargoes; owned and operated by Mid-Atlantic Terminals, LLC.

(163) **Roanoke Cement Co., Ohio St. Terminal Wharf** (36°48'52"N., 76°17'22"W.): 24- to 27-foot platforms with 500 feet of berthing space; 35 feet alongside; deck height, 10 feet; silos, 18,500-ton capacity; receipt of bulk cement and cement clinker; owned by Titan America, Inc., and operated by Roanoke Cement Co. and LaFarge Calcium Aluminates.

(164) **Roanoke Cement Co., Chesapeake Plant Wharf** (36°48'47"N., 76°17'21"W.): 280-foot face, 450 feet of berthing space; 25 feet alongside; deck height, 9 feet; shipment of fertilizer products; owned by Titan American, Inc., and operated by Roanoke Cement Co.

(165) **Apex Oil Co., Chesapeake Terminal, Lower Barge Wharf** (36°48'22"N., 76°17'23"W.): 46-foot face; 196 feet with dolphins, 19 feet alongside; deck height, 11 feet; storage space shared with adjoining upper barge wharf; receipt and shipment of petroleum products; owned by Center Point Terminal Group, Inc., and operated by Apex Oil Co.

(166) **Apex Oil Co., Chesapeake Terminal, Upper Barge Wharf** (36°48'16"N., 76°17'24"W.): 64-foot face, 235 feet with dolphins; 27 feet alongside; deck height, 11 feet; 250,000-barrel storage facility; receipt and shipment of petroleum products; receipt of asphalt; owned and owned by Center Point Terminal Group and operated by Apex Oil Co.

(167) **Perdue Farms, Chesapeake Grain Elevator Barge Wharf** (36°48'10"N., 76°17'25"W.): 280-foot face; 416 feet with fender structure; 38 feet alongside; deck height, 10 feet; receipt of grain and soy beans, shipment of soybean oil; owned and operated by Perdue Farms, Inc.

(168) **Perdue Farms, Chesapeake Grain Elevator Ship Wharf** (36°48'06"N., 76°17'20"W.): 500-foot face; 39 feet alongside; deck height, 10 feet; 6¾-million-bushel elevator; elevator loading rate 60,000 bushels per hour; shipment of grain and soybean meal; owned and operated by Purdue Farm, Inc.

(169) **Allied Terminals, Chesapeake Marine Terminal Wharf** (36°47'45"N., 76°17'32"W.): 145-foot face, 465 feet with dolphins; 31 feet alongside; deck height, 10 feet; receipt and shipment of petroleum products; 155,0000-barrel storage facility; owned and operated by Allied Terminals Inc.

(170) **Southern Aggregates, Money Point Barge Dock** (36°47'26"N., 76°17'46"W.): 200-foot face with dolphins; 15 to 35 feet alongside; deck height, 7 feet; shipment of pumice by barge; open storage shared with adjoining ship dock; owned and operated by Southern Aggregates, LLC.

(171) **Southern Aggregates, Money Point Plant Pier** (36°47'29"N., 76°17'49"W.): lower side, 447 feet long; 35 feet alongside; deck height, 12 feet; open storage for 150,000 tons; receipt and shipment of pumice, ulexite, gypsum, sand and gravel; owned and operated by Southern Aggregates, LLC.

(172) **ExxonMobil, Chesapeake Terminal W**harf (36°47'21"N., 76°18'06"W.): 55-foot face, 208 feet with platforms; 28 feet alongside; deck height, 8 feet; 363,000 barrel storage capacity; receipt of gasoline by barge; owned by Shotmeyer Oil Co., and operated by ExxonMobil Refining and Supply Co.

(173) **Amerada Hess Corp., Money Point Barge Wharf** (36°47'14"N., 76°18'09"W.): 14-foot face, 300 feet berthing with dolphins; 18 feet alongside; deck height, 12 feet; 476,000-barrel storage capacity; receipt and shipment of petroleum products; owned and operated by Amerada Hess Corp.

(174) **Amerada Hess Corp., Money Point Tanker Wharf** (36°47'05"N., 76°18'10"W.): 68-foot face with berthing

space for vessels to 700 feet; 35 feet alongside; deck height, 13.5 feet; tanks, 540,100-barrel storage capacity; receipt and shipment of petroleum products; owned and operated by Amerada Hess Corp.

(175) **Lafarge North America Cement Co. Chesapeake Terminal Wharf** (36°46'42"N., 76°18'22"W.): 465-foot long platform face; 35 feet alongside; deck height, 10.5 feet; 30,000-ton capacity storage silos; receipt of bulk cement; owned and operated by Lafarge North America Cement Co.

(176) **Elizabeth River Terminals, Piers 1 and 2** (36°46'41"N., 76°18'08"W.): Pier 1, 634-foot face; 35 feet alongside; deck height, 8.5 feet; Pier 2, 500-foot face; 11 feet alongside; deck height, 11 feet; covered storage areas with capacity to 70,000 tons; open storage area up to 5.7 acres; storage tanks up to 3.2 million gallons; cranes to 45 tons; receipt and shipment of scrap metal, pig iron, ingots, ore, salt, aggregates, pelletized animal feed, fertilizer, receipt of potash, ammonium sulphate, and rock salt; owned and operated by Elizabeth River Terminals, Inc.

(177) **Southern States Cooperative, Chesapeake Wharf** (36°46'35"N., 76°17'41"W.): 50-foot face; 250 feet with dolphins; 37 feet alongside; deck height, 10 feet; receipt of potash; owned by Southern States Cooperative, Inc. and operated by Southern States Cooperative, Inc., Fertilizer Division.

(178) **Tri-port Terminals Wharf** (36°46'20"N., 76°17'42"W.): 30-foot face with 650 feet of berthing space; 32 feet alongside; deck height, 8 feet; chemical storage tanks with total capacity of 10.9 million gallons; liquid nitrogen storage tanks with total capacity of 8.3 million gallons; receipt of liquid nitrogen and miscellaneous bulk liquid commodities; owned and operated by Tri-Port Terminals, Inc.

(179) **Nova Chemicals, Chesapeake Wharf** (36°45'18"N., 76°17'35"W.): 25-foot face, 190 feet long with platforms; 22 feet alongside; deck height, 10 feet; storage tanks for 5,040,000 gallons; receipt of styrene monomer; owned and operated by Nova Chemicals, Inc.

(180) **Dominion Generation, Chesapeake Energy Center Wharf** (36°46'11"N., 76°17'55"W.): 75-foot face, berthing space for vessels to 800 feet; 36 feet alongside; deck height, 10 feet; storage tanks for 45,000 barrels; receipt of fuel oils for plant consumption; owned by Dominion Virginia Power and operated by Dominion Energy.

(181) **International-Matex, Chesapeake Terminal Wharf** (36°46'36"N., 76°18'23"W.): 50-foot face, 280 feet with dolphins; 34 feet alongside; deck height, 12 feet; 810,500-barrel storage facility; receipt of petroleum products; owned and operated by International-Matex Tank Terminals-Chesapeake.

(182) **Atlantic Energy Wharf** (36°46'43"N., 76°18'39"W.): 30-foot face, 800 feet of berthing space with dolphins; 35 feet alongside; storage tanks, 480,000-barrel capacity; receipt and shipment of liquefied propane and butane; owned by Atlantic Energy Inc., joint venture of Amerigas Propane and Conoco/Phillips Co. and operated by Amerigas Propane, Inc.

(183) **Giant Cement of Virginia, Paradise Point Pier** (36°47'55"N., 76°17'38"W.): 750 feet long; 38 feet alongside; deck height, 15 feet; 65,000-ton storage tank; unloading tower with unloading rate of 500 tons per hour and conveyor system to storage tank; receipt of bulk cement; owned by Giant Cement of Virginia and operated by Paradise Point Marine, Inc.

(184) A disposal area, enclosed by levees, is in Hampton Roads on the north side of Craney Island. A smaller levee extends eastward from the lower east side of the disposal area to a dolphin 0.2 mile west of the ship channel; the section of the levee east of about 36°54.0'N., 76°20.8'W. covers at high water.

(185) **Lafayette River** empties into the east side of Elizabeth River 4 miles south of Sewells Point and 22 miles from the Virginia Capes. The river, used exclusively by pleasure and recreational craft, is entered by a marked dredged channel between **Tanner Point** and **Lamberts Point**, 1.5 miles to the southward. A light, 0.6 mile south of Tanner Point, marks the channel entrance. The dredged channel leads for 1.1 miles to a point about 0.3 mile westward of the Hampton Boulevard Bridge. From this point, a marked natural channel leads for about 2.4 miles to where the river divides into two forks. In 2010, the controlling depth was 8 feet in the dredged section, thence 6 feet to the forks; thence in 2003, 2 to 3 feet up each fork; the chart is the best guide. The dredged channel turns sharply at the light off **Lawless Point**, a mile above the entrance, and vessels must be on the alert to avoid grounding. **General and small-craft anchorages** extend up Lafayette River to the first bridge. (See **110.168 (c) and (h)**, chapter 2, for limits and regulations.)

(186) **Hampton Boulevard Bridge**, 1.5 miles above the entrance to Lafayette River, has two fixed channel spans with a clearance of 24 feet. A yacht club is just below the north end of the bridge.

(187) **Knitting Mill Creek**, is on the south side of Lafayette River about 3 miles above the mouth. In 2010, the controlling depth was 4.6 feet to near the head of the project. Some supplies, gasoline, and berths are available within the creek. Repairs can be made; largest marine railway, 40 feet; lift, 10 tons.

(188) **East Haven**, on the south side of Lafayette River about 3.5 miles above the mouth, has a dredged channel that leads to a settling basin and boat ramp at the head. In 2010, a controlling depth of 2.2 feet was in the channel to just below the head of the basin under construction.

(189) **Granby Street Bridge**, 3.5 miles above the entrance to Lafayette River, has a 40-foot fixed span with a clearance of 22 feet.

(190) Just above Granby Street Bridge (chart 12253), Lafayette River divides into two forks, both unmarked. A fixed highway bridge over the mouth of the north fork has a clearance of 18 feet. A fixed highway bridge over

the south fork, a mile from Granby Street Bridge, has a channel width of 27 feet and a clearance of 9 feet; another fixed highway bridge 0.3 mile farther up the south fork has a channel width of 23 feet and a clearance of 4 feet.

Chart 12253

(191) **Craney Island**, now a part of the mainland, is on the west side of Elizabeth River 4.5 miles south of Sewells Point. The low and thinly wooded area is the site of a navy fuel depot, and the offshore wharf and piers, all on the eastern side, are used only by Government vessels. Two daybeacons close off the northeast end of Craney Island mark submerged rocks. The offshore wharf and piers have depths of 22 to 47 feet alongside. A submerged water main crosses from Craney Island to the north side of Lamberts Point; vessels are cautioned not to anchor in the vicinity of the lighted range that marks the crossing. **Portsmouth Coast Guard Station** is on the west side of the entrance to Craney Island Creek.

(192) A naval restricted area is along the south sides of Craney Island. (See **334.293**, chapter 2, for limits and regulations.)

(193) **Lamberts Point**, on the east side of Elizabeth River 5.3 miles south of Sewells Point, is the site of several deepwater piers. These facilities were described earlier in this chapter under Wharves, Norfolk Harbor.

(194) **Western Branch** (36°52.0'N., 76°19.7'W.) empties into the southwest side of Elizabeth River 5.8 miles south of Sewells Point and 23.8 miles from the capes. A marked channel leads from the main channel in Elizabeth River for 4.5 miles upstream. In 2007, the controlling depth was 17.1 feet (17.9 feet at midchannel) in the dredged channel to the first bridge, thence 16.3 feet (17.9 feet at midchannel) to the head of the project about 0.25 mile above the first bridge; then in 1980, about 7 feet could be carried to **Drum Point**, 0.5 mile above the third bridge.

(195) A 540-foot lighted pier about 1 mile above the entrance to Western Branch extends to the northern edge of the marked channel; mariners are advised to use caution in the area. A fixed highway bridge, about 1.2 miles above the entrance, has a clearance of 45 feet.

(196) **West Norfolk,** northward of the fixed bridge, has a shipyard and small-craft facilities. Supplies, fuel, and slips are available. Repairs can be made; largest marine railway, 220 feet.

(197) **Churchland** twin fixed highway bridges, 2.3 miles above the entrance to Western Branch, have clearances of 38 feet. The overhead power cable on the upper side of the bridge has a clearance of 45 feet; the transmission towers are marked by lights.

(198) A 280-foot fishing pier extends from the southeast shore about 1.4 miles above the Churchland bridges. An overhead power cable close upstream of the pier has a clearance of 47 feet. **Hodges Ferry** fixed highway bridge, 4.7 miles above the entrance, has a clearance of 18 feet. The overhead power cable on the upstream side of the Hodges Ferry bridge has a clearance of 37 feet.

(199) **Pinner Point** (36°51.3'N., 76°19.1'W.) is on the southwest side of Elizabeth River, 6.8 miles from Sewells Point. Most of the piers at the point have been destroyed by fire or are in poor condition; they are being razed or renovated. The Portsmouth Marine Terminals, Inc. operates the facilities at the Portsmouth Marine Terminal about 0.3 mile northwestward of Pinner Point. A marked dredged channel leads from Elizabeth River to a docking area at the terminal. In 2001, the controlling depth to and in the docking area was 38.5 feet. The facilities of the Portsmouth Marine Terminal and those at Pinner Point were described earlier in this chapter under Wharves, Norfolk Harbor.

(200) **Scott Creek** (36°51.1'N., 76°18.5'W.), on the southwest side of Elizabeth River, 7.3 miles from Sewells Point, is entered through a channel marked by daybeacons. In 2008, the controlling depth was 4.9 feet (6.8 feet at midchannel) to Daybeacon 5, thence 2.6 feet (3.5 feet at midchannel) to the head of the project. The channel leads to old fishing wharves now used by pleasure craft. A marina with a 60-ton lift is on the S side of the creek about 0.4 mile above channel entrance. A marina is on the point on the south side of the creek, about 0.9 mile above the channel entrance, and had a reported depth of 4 feet in the approach and alongside the piers. Berthage, electricity, water, ice, towing, launching ramp, a 40-foot marine railway, and a 30-ton lift are available; hull, engine, and electrical repairs can be made.

(201) **Hospital Point**, on the southwest side of Elizabeth River 7.5 miles from Sewells Point, is the site of a U.S. Naval Hospital. The main hospital building, the largest structure along the southwest side of Elizabeth River, is visible for many miles. The hospital landing has depths of about 18 feet at the face.

(202) **Norfolk**, or parts of it, has been described at some length in the preceding text. The midpoint of the downtown section can be taken as the **City Wharf** (36°50.9'N., 76°17.8'W.) at the foot of West Main Street, which is on the northwest side of Elizabeth River 7.7 miles from Sewells Point and 25.7 miles from the Virginia Capes. City Wharf has depths of 15 feet at the face, but is in poor condition. The wharves northwest and southwest of West Main Street have depths of 14 to 20 feet alongside.

(203) (See Appendix B for **Norfolk climatological table**.) A **weather** summary for Norfolk is given in the preceding text under Norfolk Harbor.

(204) **Smith Creek**, opposite Hospital Point 7.5 miles from Sewells Point, has entrance depths of about 3 feet with deeper water inside, but the entrance is restricted by a 48-foot-wide fixed highway bridge with a clearance of 13 feet. **Small-craft anchorages** are in Smith Creek. (See **110.1 and 110.168 (d)(4) and (h)**, chapter 2, for limits and regulations.)

(205) The **Atlantic Marine Center**, the Atlantic shipbase of the National Ocean Service, is on the east side of the entrance to Smith Creek. There are 243-, 251-, and 312-foot berths along the bulkhead wharf, which has depths of 20 feet alongside.

(206) Mariners transiting the area near Town Point Reach are advised that the City of Norfolk has established a **"Slow no-wake" zone** from Scott Creek to the entrance to Eastern Branch.

(207) **Waterside** is in the downtown area of **Town Point**, on Norfolk, the north side of the intersection between Elizabeth River and Eastern Branch. A municipal marina at this popular tourist stop has reported depths of about 16 feet at the entrance, inside the marina, and alongside the berths. Transient berths are available year-round. A sewage pump-out station is at the marina. Electricity is at the berths; ice and provisions are available nearby. The marina staff monitors VHF-FM channels 16 and 68.

(208) A local passenger ferry operates between the Portsmouth and Norfolk waterfronts in the vicinity of Town Point Reach. The ferry boats are distinguished by a high intensity flashing green masthead light which is visible all around the horizon. Mariners are advised to use caution while transiting the area.

(209) **Eastern Branch** (36°50.5'N., 76°17.6'W.) empties into the east side of Elizabeth River 8 miles from Sewells Point and 26 miles from the Virginia Capes.

(210) A Federal project provides for a channel 25 feet deep to the Norfolk Southern Railway Bridge, 2.5 miles above the entrance. (See Notice to Mariners and latest edition of the charts for controlling depths.)

(211) Above the Norfolk Southern Railway Bridge, the natural channel has depths of 10 to 18 feet to the forks 3.3 miles from the entrance, and usually is marked by bush stakes.

(212) **General anchorages** are in Eastern Branch. (See **110.168 (e) and (h)**, chapter 2, for limits and regulations.)

(213) Downtown Norfolk is on the north side of Eastern Branch, and **Berkley**, a subdivision, is on the south side. Traffic is fairly heavy as far as Campostella Bridge. Depths at most of the piers on both sides of the branch range from 14 to 25 feet.

(214) The highway bridge, 0.4 mile above the entrance to Eastern Branch, has a bascule span with a clearance of 48 feet. The Norfolk Southern Railway Bridge, 1 mile above the entrance, has a bascule span with a clearance of 4 feet. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) An overhead power cable 200 yards east of this bridge has a clearance of 150 feet.

(215) **Campostella Bridge**, 1.4 miles above the entrance to Eastern Branch, has a fixed span with a clearance of 65 feet. The Norfolk Southern Railway Bridge, 2.5 miles above the entrance, has a swing span with a clearance of 6 feet. (See **117.1 through 117.59 and 117.1007(a)**, chapter 2, for drawbridge regulations.)

(216) There are several shipyards along Eastern Branch: the largest floating drydock has a 3,200-ton capacity and handles vessels up to 316 feet; the largest marine railway has a 5,500-ton capacity and can handle vessels to 380 feet.

(217) **Southern Branch**, the continuation of Elizabeth River south of the junction with Eastern Branch, is a part of the **Intracoastal Waterway** route southward to Albemarle Sound. The waterway is described at length in **United States Coast Pilot 4, Atlantic Coast, Cape Henry to Key West**.

(218) The Federal project for Southern Branch provides for a channel 45 feet deep to the third bridge, thence 35 feet deep to the seventh bridge. The channel is maintained at or near project dimensions, and is well marked. (See Notice to Mariners and latest edition of the charts for controlling depths.)

(219) A **speed limit** of 6 knots is prescribed for that part of Southern Branch between Eastern Branch and the first bridge.

(220) The Norfolk and Portsmouth Belt Line Railroad Bridge, 1.9 miles south of the junction with Eastern Branch and 9.9 miles from Sewells Point, has a vertical-lift span with a clearance of 6 feet down and 142 feet up. (See **117.1 through 117.49,** chapter 2, for drawbridge regulations.) State Route 337 highway bridge, 0.2 mile southward of the Norfolk and Portsmouth Belt Line Railroad Bridge, has a vertical lift span with a clearance of 15 feet down and 145 feet up. The Norfolk Southern Railway Bridge, 10.9 miles from Sewells Point, has a vertical lift span with a clearance of 10 feet down and 135 feet up. (See **117.1 through 117.59 and 117.997,** chapter 2, for drawbridge regulations.)

(221) U.S. Routes 13 and 460 highway bridge and the Norfolk Southern Railway Bridge, immediately to the southward, 13.1 miles from Sewells Point, have bascule spans with a least clearance of 7 feet. (See **117.1 through 117.49,** chapter 2, for drawbridge regulations.) Large vessels must exercise caution when making the turns to these bridges because of the current.

(222) The facilities on the east side of Southern Branch are mostly shipyards, oil terminals, and bulk-cargo piers, while Government installations front most of the west side.

(223) The port facilities on the Berkley side of Southern Branch were described earlier in this chapter under Wharves, Norfolk Harbor.

(224) The shipyard at Berkley has six piers that can accommodate vessels up to 1,200 feet. The largest floating drydock at the yard is 850 feet long over the keel blocks, 192 feet wide, 36 feet deep over the keel blocks, and has a lifting capacity of 54,250 tons. A marine railway with a capacity of 1,000 tons is available at the shipyard; cranes up to 67 tons are also available. The largest shaft the shipyard is able to produce is 100 feet by 30 inches.

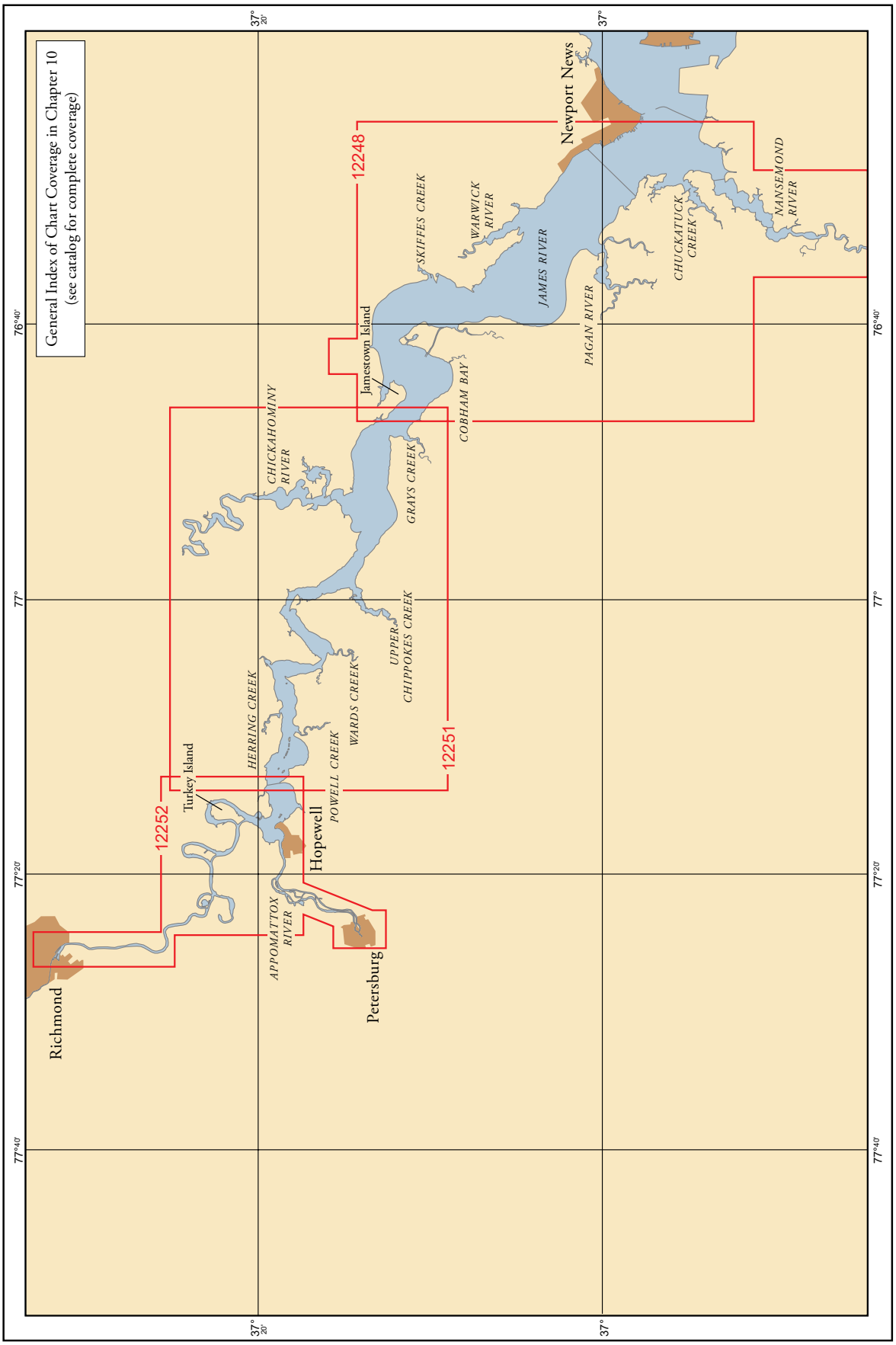
(225) The **Norfolk Naval Shipyard** is on the **Portsmouth** side of Southern Branch, 3.5 miles from Lamberts Point, and occupies about 2 miles of waterfront. There are

naval **restricted** areas along this reach. (See **334.290**, chapter 2, for limits and regulations.)

(226) Most of the oil terminals are at **Chesapeake**, on the east side of Southern Branch, 10 miles from Sewells Point and 28 miles from the Capes. These facilities, as well as the deep-draft bulk cargo, grain, chemical, and fertilizer piers and wharves, were described earlier in this chapter under Wharves, Norfolk Harbor.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12221	Fishermans Island, Chesapeake Bay	37°06'N/75°59'W	3.4	3.2	0.1
12221	Wolf Trap Light, Chesapeake Bay	37°23'N/76°11'W	1.8	1.7	0.1
12221	Tue Marshes Light, York River Entrance	37°14'N/76°23'W	2.5	2.3	0.1
12221	Old Point Comfort	37°00'N/76°19'W	2.8	2.6	0.1
12222	Craney Island (lighthouse), Elizabeth River	36°54'N/76°20'W	2.9	2.7	0.1
12222	Lynnhaven Inlet, Virginia Pilots Dock	36°54'N/76°05'W	2.6	2.4	0.1
12222	Messick Point, Back River	37°07'N/76°19'W	2.6	2.5	0.2
12222	Hampton Roads, Sewells Point	36º57'N/76°20'W	2.8	2.5	0.1
12222	Cape Henry	36°56'N/76°00'W	3.5	3.2	0.1
12225	Watts Island, Chesapeake Bay	37º48'N/75°54'W	1.8	1.7	0.1
12245	Newport News, James River	36º58'N/76°26'W	2.9	2.7	0.1
12253	Norfolk, Elizabeth River	36º51'N/76°18'W	3.1	2.9	0.1
12253	Portsmouth, Naval Shipyard, Elizabeth River	36°49'N/76°18'W	3.1	2.9	0.1
12254	Little Creek, Naval Amphibious Base	36°55'N/76°11'W	2.9	2.7	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 November 2011


General Index of Chart Coverage in Chapter 10
(see catalog for complete coverage)
37° 20'
37°
76°40'
77°
77°20'
77°40'
12248
12251
12252
Newport News
Jamestown Island
Turkey Island
Hopewell
Petersburg
Richmond
SKIFFES CREEK
WARWICK RIVER
JAMES RIVER
PAGAN RIVER
CHUCKATUCK CREEK
NANSEMOND RIVER
COBHAM BAY
GRAYS CREEK
CHICKAHOMINY RIVER
UPPER CHIPPOKES CREEK
WARDS CREEK
POWELL CREEK
HERRING CREEK
APPOMATTOX RIVER

Chesapeake Bay, James River

(1) This chapter describes the James River and several of its tributaries of which the Nansemond, Chickahominy, and Appomattox Rivers are the more important. Also discussed are the ports of Richmond and Hopewell, as well as several of the minor ports and landings on these waterways.

COLREGS Demarcation Lines

(2) The lines established for Chesapeake Bay are described in **80.510**, chapter 2.

Charts 12248, 12251

(3) **James River** rises in the Allegheny Mountains near Clifton Forge, VA, and flows 295 miles southeastward to Hampton Roads at Newport News, 21.5 miles by main channel from the Virginia Capes. The head of commercial navigation is at Richmond, 78 miles above the mouth. The river varies in width from 1,000 feet at Richmond to 4.3 miles at the mouth. Traffic consists chiefly of general cargo, chemicals, livestock, tobacco, and paper products. Drafts of vessels using the river above Newport News generally do not exceed 15 feet, but vessels drawing 24 feet or more navigate it occasionally.

(4) **Mileages** shown in this chapter as Mile 0.9N, Mile 12W, etc., are the nautical miles above the mouth of James River; the letters N, S, E, and W denote by compass points the side of the river where each feature is located. Mile 0.0 is a point in the main channel on a line between Pig Point and Newport News Point; the midchannel point is 21.5 miles from the Virginia Capes.

(5) It is to be understood that the mileages given are approximations. The values are not intended to be finite. The intended degree of accuracy is only supposed to be enough to put the user of the chart into the general vicinity of the cited object.

Channels

(6) The Federal project for James River provides for dredging depths of 25 feet to the Richmond Deepwater Terminal and in the Richmond Deepwater Terminal Turning Basin, 74 miles above the mouth, thence 18 feet to and in the Richmond Harbor Turning Basin, 77 miles above the mouth, and thence 18 feet to the Richmond Lock at Richmond, 78 miles above the mouth. The river is well marked. (See Notice to Mariners and latest editions of the charts for controlling depths.)

Anchorages

(7) General anchorages extend for about 7 miles above the mouth. (See **110.1 and 110.168 (b) and (h)**, chapter 2, for limits and regulations.)

Dangers

(8) Numerous stakes, piling, wrecks, and other obstructions are on both sides of the main channel in James River.

Currents

(9) The currents in James River follow the general direction of the channel, except between Hog Island and Jamestown Island, 25 miles above the mouth, where they set across Goose Hill Flats. In the lower reaches, the velocity of flood is about equal to that of ebb. Near Richmond, the drainage flow predominates and the current seldom, if ever, sets upstream. These normal conditions are subject to change by wind and freshets.

(10) During severe winters some drift **ice** appears, and at times the river freezes over, but navigation to Richmond hardly ever is suspended because the ice is broken up by a tug.

(11) **Freshets** occur irregularly in the fall, winter, and spring; their height at Richmond ranges from 6 to 32 feet, though the latter is exceptional. The maximum freshet heights usually occur between the middle of March and the middle of April; the freshets occurring at other times usually reach heights not greater than about 6 feet above the normal high water. The number of freshets that cause the water to rise above the level of the wharves along the main channel at Richmond averages about one per year; the water seldom rises above the level of the city wharf. The flood heights diminish rapidly below Richmond; the extreme is about 11 feet less at Dutch Gap, and the rise is not felt at Hopewell. The cutoffs have reduced the freshet height at Richmond about 1 foot.

Pilotage, James River

(12) Pilotage on the James River 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 to operate in these waters.

(13) The Chesapeake and Interstate Pilots Association offers pilot services to vessels engaged in the coastwise trade and public vessels to any port or place on the James River. Chesapeake and Interstate Pilots Association

offers some pilot service in the upper James River at night. Arrangements for pilots may be made through ships' agents or the pilot office in Norfolk (telephone, 757–855–2733). Vessels requesting a river pilot only are boarded off Sewells Point. Pilots from sea are boarded at Cape Henry. Pilots use commercial launch services. Pilots begin radio watches at the launch service on VHF–FM channel 16, 30 minutes prior to last ETA. Advance pilot orders requested with 3-hour ETA update and any subsequent changes requested.

(14) The Virginia Pilots Association offers pilotage to all vessels. Pilot service for the upper 38 miles of the river is available only during daylight. (See Pilotage, chapters 3 and 9.)

Supplies and Repairs

(15) The principal places for **supplies** above Newport News are Hopewell and Richmond. **Repair** facilities are limited; small marine railways operate in Chuckatuck Creek, Pagan River, Appomattox River, and at Falling Creek.

Chart 12248

(16) The entrance to James River is between Pig Point (36°54.3'N., 76°26.5'W.) and **Newport News Point**, 3.6 miles to the north-northeastward; the midchannel point is 21.5 miles from the Virginia Capes and is close to the Newport News Wharves, described in chapter 9.

(17) A **bridge-tunnel complex** (Interstate Route 664) crosses Hampton Roads and connects Newport News with Suffolk. The fixed bridge crosses a small boat channel in the south section of the complex and has a clearance of 30 feet.

(18) **Nansemond River** empties into the mouth of James River between Pig Point and **Barrel Point**, 2 miles to the west-northwest. Traffic on Nansemond River consists chiefly of pleasure craft. The river is used considerably by vessels with drafts of 9 feet and has been navigated with drafts of as much as 11 feet.

(19) A narrow channel leads to Suffolk, 15 miles above the mouth of Nansemond River. In 2005, the controlling depth was 5.3 feet to Daybeacon 26; thence in 1978, 8 feet was reported to Suffolk. The channel is well marked to Western Branch, 10 miles above the mouth. Local knowledge is necessary to navigate the narrow unmarked channel above Western Branch. A dam is 0.5 mile above the bridge in Suffolk.

Currents

(20) In Nansemond River, the current velocity is about 0.9 knot and follows the general direction of the channel.

(21) **Pig Point,** on the south side of the entrance to James River and the east side of the entrance to Nansemond River, is the site of a community college and a manufacturing plant. In 1982, an unmarked channel leading to a pier at Pig Point had a reported controlling depth of 2 feet; in 1984, the channel was not maintained. The twin tanks 0.4 mile east of the pier are prominent. The submerged pilings of an old pier extend northward 0.7 mile from the vicinity of the tanks and are marked at the outer end by a daybeacon.

(22) About 2.2 miles southwestward of Pig Point, a narrow, dredged channel marked by a seasonal light and daybeacons leads southward from Nansemond River channel into **Bennett Creek**. In 2010, the controlling depth was 1.6 feet in the entrance channel to the mouth of the creek. The creek has deeper water inside to the fixed highway bridge, which has a clearance of 20 feet. Gasoline is available at a small-boat basin just below the bridge.

(23) From Pig Point to Hollidays Point, 6.5 miles upstream, Nansemond River is wide, but the channel is crooked and leads between extensive shoals that are almost bare at low water in some places. There are many fish stakes on the shoals near the mouth. Above Hollidays Point, the river is narrow and crooked, but the midchannel is clear to Suffolk.

(24) The highway bridge over Nansemond River at **Town Point**, on the south side 2.4 miles above the mouth, has a fixed span with a clearance of 65 feet. An overhead power cable with a clearance of 96 feet over the main channel crosses the river about 0.8 mile above the bridge.

(25) **Great Shoal**, on the northwest side of the channel 1 mile up Nansemond River from the bridge, has an oyster bar that bares 0.5 foot at low water; it is marked by bush stakes.

(26) An overhead power cable with a clearance of 40 feet crosses the river about 2.5 miles south of **Hollidays Point**.

(27) **Western Branch** empties into the west side of Nansemond River, about 10 miles above the mouth. In 2001, the controlling depths in the dredged channel were 0.8 foot in the south half with shoaling to bare in the north half for about 0.7 mile above the mouth; much greater depths can be carried with local knowledge; thence in 1974–1977, a midchannel controlling depth of 2 feet was available to the fixed highway bridge at **Reids Ferry**, 1.6 miles above the mouth. The channel entrance is marked by daybeacons for about 700 feet above the junction with the Nansemond River. A seasonal marina, 0.7 mile from the main Nansemond channel, has a pier with a depth of about 10 feet at the face. Gasoline, diesel fuel, a 45–foot marine railway, and a 4-ton lift are available. Minor repairs can be made. In 1967, a submerged obstruction was reported near the mouth of Western Branch in 36°47'20"N., 76°33'47"W.

(28) A fixed highway bridge with a clearance of 35 feet crosses the Nansemond River, about 12.5 miles above its mouth.

(29) **Suffolk** is an important rail center on the south side of Nansemond River, 15 miles above the mouth. The highway bridge at Suffolk has a 45-foot fixed span and a

clearance of 3.5 feet. The overhead power and telephone cables at the bridge have a clearance of 40 feet.

(30) **Batten Bay**, on the west side of James River just north of Nansemond River, has general depths of 2 to 6 feet. **Ragged Island Creek**, at the north side of the bay, is shallow and little used.

(31) **Chuckatuck Creek**, which empties into Batten Bay from southwestward, has depths of about 4 feet in the approach through the bay and deeper water inside for about 1.7 miles. The channel over the bar and through the bay is marked by lights, buoys, and daybeacons; the channel edges usually are marked by bush stakes.

(32) The highway bridge over Chuckatuck Creek, 0.8 mile above the mouth, has a fixed span with a clearance of 35 feet. A small shipyard is at **Crittenden**, on the south side of the creek just eastward of the bridge; berths, gasoline, diesel fuel, ice, and some marine supplies are available. All types of repairs can be made; a marine railway there can handle craft up to 75 feet long.

(33) **James River Bridge**, Mile 4, extends 4 miles from shore to shore in a northeast-southwest direction. The main channel vertical-lift span, 1 mile from the northeast shore, has a clearance of 60 feet down and 145 feet up. The bridgetender monitors VHF–FM channel 13; call sign KQ–7169. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) A fixed span midway between the two shores has a clearance of 25 feet. The overhead power cable crossing the river close northward of the bridge has a clearance of 172 feet at the lift span and 100 feet at the fixed span. Both of the piers that protect the two cable suspension towers just north of the lift span are marked by three fixed red lights.

(34) **Mariners' Museum,** Mile 6E, is at the western side of **Lake Maury**.

(35) **White Shoal**, on the southwest side of the main channel at Mile 7, is marked near its southeast end by the tower of an abandoned lighthouse. A secondary channel on the opposite side of the shoal also is marked.

(36) **Pagan River** empties into James River at Mile 7W. Traffic on this river consists chiefly of shellfish, sand, and gravel. (See Notice to Mariners and the latest edition of the chart for controlling depths.)

(37) The approach to Pagan River through the dredged channel southeast of White Shoal is well marked; the river inside is also marked to within 1 mile of Smithfield.

(38) **Jones Creek**, on the south side of Pagan River 0.7 mile above the mouth and marked by a light and a daybeacon at the entrance. A fixed highway bridge 0.6 mile above the mouth has a width of 30 feet and a clearance of 8 feet. In 2003, a replacement fixed highway bridge was under construction with a design clearance of 17 feet. An overhead power cable close southward of the bridge has a clearance of 32 feet. A marina and fish pier are at **Rescue**, just below the bridge; some supplies, fuel, and a 30-ton mobile hoist are available; repairs can be made. A 45-foot marine railway is 100 yards above the bridge. The fixed highway bridge, 2.5 miles above the mouth, has a width of 40 feet and a clearance of 7 feet.

(39) **Battery Park** is on the south side of Pagan River 1 mile above the mouth. Hull and engine repairs can be made at the town, in a boatyard 150 yards above the oyster plant.

(40) **Cypress Creek**, on the south side of Pagan River 4 miles above the mouth, has depths of 4 feet or more for 2 miles. The fixed highway bridge over the entrance has a clearance of 12 feet. An overhead power cable with a clearance of 36 feet crosses the creek about 0.8 mile above the bridge. A fixed highway bridge, with a clearance of 16 feet for a width of 46 feet, crosses the river about 1.1 miles above the mouth.

(41) **Smithfield**, on the southwest side of Pagan River 4.5 miles above the mouth, is famous for its hams. The fixed highway bridge just above the town has a width of 30 feet and a clearance of 15 feet. An overhead power cable at the bridge and one 0.4 mile west of the bridge have clearances of 30 feet. A fixed highway bridge, with a clearance of 16 feet for a width of 48 feet, crosses the river about 0.6 mile above the fixed highway at Smithfield.

(42) **Deep Creek**, Mile 8E, is used as an overnight anchorage by many oyster boats. A dredged marked channel leads from James River to a turning basin opposite Menchville. In 2010, the controlling depth was 4 feet (6.7 feet at midchannel) from the channel entrance to the turning basin with 4.5 feet in the basin. Traffic consists of some shellfish, sand, and gravel.

(43) **Menchville** is on the northwest side of the entrance to Deep Creek. The landings at the town have depths of about 5 feet alongside; gasoline and diesel fuel are available. Numerous pleasure craft use Deep Creek during the summer. Gasoline, supplies, and a 12-ton lift are available on the east side about 0.5 mile above the mouth.

(44) **Warwick River**, marked by daybeacons to a point about 3 miles above the mouth, is entered just north of Deep Creek; depths of 4 feet or more can be carried to **Fort Eustis**, 7 miles above the mouth. The mouth of the river is sometimes used as an anchorage by small oyster boats.

(45) **Point of Shoals**, Mile 12W, is an extensive shallow area in **Burwell Bay**. There are also wide areas of unmarked shoals between the channel and the northeastern shore. The main channel formerly circled around Point of Shoals, but is now through the dredged cut known as **Rocklanding Shoal Channel**. The old channel has shoaled, but is still buoyed; the current velocity is 0.9 knot. The several small landings along the shore of Burwell Bay have depths of about 4 feet at their outer ends.

(46) Burwell Bay is used as an anchorage for a **Maritime Administration Reserve Fleet**. (See **162.270**, chapter 2, for regulations **restricting navigation** in the vicinity of the decommissioned ships.)

(47) A small-craft harbor of refuge is on the west side of Burwell Bay at **Tylers Beach** (37°04.9'N., 76°40.0'W.). A dredged channel, marked by lights and daybeacons, leads from James River to the harbor basin. In 2010, the controlling depth was 0.9 foot in the entrance channel with shoaling to 0.3 foot in the basin.

(48) At Mile 16.2E, a dredged channel, marked by a **075°** lighted range, lights, daybeacons, and a buoy, leads from James River to a boat basin of the U.S. Maritime Administration reservation at **Fort Eustis**. In 1992, the controlling depths were 3 feet (10 feet on centerline) to the basin with 3 to 9 feet in the basin. The ruins of an army pier are visible close northward of the channel. Decommissioned ships are moored on either side of the channel.

(49) **Deep Water Shoals Light** (37°08'56"N., 76°38'12"W.), Mile 16.9E, 34 feet above the water, is shown from a pile with a black and white diamond-shaped daymark, in depths of 2 feet. A seasonal sound signal is at the light.

(50) **Skiffes Creek**, Mile 17.8E, has a private channel at the entrance leading to an army pier and turning basin, and to a small-boat basin to the northward. The channel is marked by lighted and unlighted buoys, lights, a directional light, and daybeacons. In 1994, the controlling depths were 20 feet in the entrance channel and 19 to 20 feet in the basin except for lesser depths along the south and east edges of the basin south of the army pier, thence 20 feet alongside the pier on both sides; thence in 1982, 12 to 18 feet in the small-boat basin except for shoaling near the north limit.

(51) A **restricted area** is at the entrance to the Skiffes Creek channel. (See **334.280**, chapter 2, for limits and regulations.)

(52) A privately marked barge channel with a reported depth of 12 feet in 1978 leads to the Surry Nuclear Power Plant on the west side of James River opposite Skiffes Creek. The nuclear powerplant is operated by the Virginia Electric and Power Co. A 120-foot-high nuclear reactor tower at the station is prominent from all directions on the river.

(53) **College Creek**, Mile 22.5N, has depths of 1 foot across the flats at the mouth, 4 feet inside for 2 miles, thence 2 feet for 0.5 mile to **Williamsburg Landing**, 1 mile from the town of **Williamsburg**. The creek is difficult to navigate without local knowledge. Fixed bridges across the creek at the mouth and about 4 miles above the mouth have clearances of 10 and 12 feet, respectively. Private aids mark the creek.

(54) **Cobham Bay**, a wide bight at Mile 25.6S, has general depths of 5 to 7 feet.

(55) **Jamestown Island**, at Mile 26N, is the site of historic **Jamestown**, which was settled by Capt. John Smith and his 105 cavaliers in 1607. The town is on **Church Point**, Mile 28N, the northwest end of the island. The Jamestown white monument is prominent; the ruins of the old church are hidden by trees.

(56) **The Thorofare**, **Back River**, and **Sandy Bay** separate Jamestown Island from the mainland and form a small-craft passage that connects at each end with James River. The Thorofare is a shallow bay on the northeast side of the island. Back River is a narrow, winding channel that extends from the head of The Thorofare along the north side of the island to Sandy Bay, which opens into the James River. A narrow channel marked by daybeacons leads through the extensive mudflats in the upper part of The Thorofare. The controlling depths are about 2 feet through The Thorofare, thence 4 feet through Back River and Sandy Bay to the highway bridge that crosses its mouth, and thence 2 feet across the bar to deep water in James River. In 1971, extensive shoaling was reported on the bar and in 2005, shoaling was reported on the north side of the channel just east of Jamestown Island Buoy 11. The highway bridge across the mouth of Sandy Bay has a 48-foot fixed span with a clearance of 12 feet. A small island about 200 yards northeastward of the bridge should be left to northward.

(57) **Mill Creek**, which empties into The Thorofare from the northward, has a depth of 1 foot at the entrance and 2 or more feet to a landing 1.5 miles above the mouth. Above the landing, the creek is foul with snags and obstructions. The fixed highway bridge across the mouth of the creek has a clearance of 10 feet.

(58) **Powhatan Creek**, used by fishermen and small pleasure craft during the summer, empties from the northward into Sandy Bay. The mouth of the creek is about 0.3 mile above the highway bridge that crosses the mouth of Sandy Bay. The bridge has a width of 48 feet and a clearance of 12 feet. In 1970, depths of 4 feet were reported at the mouth of the creek, thence 6 feet to a marina near the highway bridge about 0.4 mile above the mouth. The fixed bridge has a width of 25 feet and a clearance of 12 feet. A current is reported noticeable at both bridges. Gasoline, water, some marine supplies, and a 17-ton lift are available at the marina; minor hull and engine repairs can be made. The numerous snags along the banks of the creek can be avoided by staying in midstream, and the island 0.3 mile above the mouth should be left to the northward.

(59) The approach to Powhatan Creek through Sandy Bay is marked by daybeacons and uncharted stakes, but local knowledge is required to carry the best water. In 1984, severe shoaling was reported in the channel through the basin.

Chart 12251

(60) **Scotland** (37°11.0'N., 76°47.2'W.), Mile 27.5S, is the mainland terminus of the Jamestown Ferry, which operates to **Glass House Point**, 1 mile northwest of the monument at Jamestown, across the river. Ferry slip depths are about 18 feet on the Scotland side and about 20 feet on the Jamestown side. The piers at Scotland and Glass House Point extend channelward over 700 feet

and about 1,600 feet, respectively; the slips are marked by lights and a sound signal. The partly submerged remains of the old Scotland wharf are about 100 yards southeast of the slips.

(61) **Grays Creek**, Mile 28.2S, is entered through a shallow bay. A 3-foot channel leads to deeper water inside. There are many snags and obstructions in the creek. A marina is 1 mile above the mouth.

(62) **Chickahominy River**, Mile 33N, has a controlling depth of 6 feet in the entrance channel, thence 10 feet or more to the head of tidewater navigation at Walkers Dam 19 miles above the mouth. The lock in the dam has a length of 60 feet, a width of 15 feet, and a depth of 4 feet over the sill. The lock gates are hand operated; there is no tender. It is recommended that at least two strong persons be on board before attempting to use the lock. Obstruction lights mark the dam spillway.

(63) The seasonally buoyed channel through the broad flats at the entrance to Chickahominy River is entered 0.7 mile westward of Glass House Point; daybeacons and seasonal buoys mark the critical points inside. The river is used by fishermen and pleasure boatmen.

(64) Wharf ruins extend out about 200 yards from shore 0.5 mile above **Barrets Point**, on the east side of the entrance. A sunken barge lies on the eastern edge of the channel 0.8 mile above the point.

(65) **Barrets Ferry** highway bridge, 1.3 miles above the mouth, has a fixed span with a clearance of 52 feet. A pier with a depth of 7 feet at the face extends 100 yards into the river from the east bank just north of the bridge.

(66) **Wright Island Landing**, on the east side of Chickahominy River 6.5 miles above the mouth and **Shipyard Landing** on the same side of the river about 500 yards above Wright Island Landing, were in 1997, reported to be in ruins. The buildings at the wharf on Wright Island Landing are prominent from downstream. A marina at **Brickyard Landing**, on the north side of the river about 2.5 miles above Wright Island Landing can provide berths, gasoline, water, food, ice, pumpout station, with hull and engine repairs available.

(67) The Thorofare is an unmarked cut leading through the bend of the river 10 miles above the mouth; the controlling depth is 5 feet. Small boats able to pass through the cut can save 1.2 miles.

(68) A small marina on the west side 11 miles above the mouth, just north of **Mt. Airy**, has a depth of 9 feet at the face. Gasoline and some supplies are available.

(69) **Lanexa**, on the east side 15 miles above the mouth, has a marina with reported depths of 10 feet alongside. Gasoline and supplies are available. Hull and engine repairs can be made; a 70-foot marine railway and a 10-ton mobile lift are at the marina.

(70) The former ferry slip and piers at **Claremont**, Mile 37.5S, are in ruins, and the bottom area to the southeastward near **Sloop Point** (37°13.8'N., 76°57.0'W.) is foul. The former ferry slip across the river at **Sandy Point** is also in ruins.

(71) **Upper Chippokes Creek**, Mile 38.5S, has depths of about 5 feet for 3 miles, thence 2 feet for 1 mile to the head of navigation. The channel into the creek is close along the south bank. An overhead power cable about 3.5 miles above the mouth has a clearance of 56 feet. A wreck, marked by a light, is off the creek entrance close to the southwest side of James River main channel; the wreck extends about 2 feet above high water.

(72) **Brandon** wharf, Mile 39.3W, is a private landing with depths of 20 feet alongside.

(73) **Sturgeon Point**, Mile 42.5N, is the site of an abandoned brickyard.

(74) **Wards Creek** empties into James River at Mile 46S. A depth of 2 feet can be carried across the mudflats at the entrance by following the east bank at a distance of about 75 yards. Above the mouth, depths are 4 to 10 feet for 1.7 miles. The creek is an excellent storm anchorage for any boat able to enter.

(75) **Fort Powhatan** (37°16.2'N., 77° 04.6'W.) is at Mile 46.8S.

(76) **Ruffins Wharf**, Mile 48.2E, has depths of about 16 feet at the face.

(77) An overhead power cable, with a clearance of 180 feet at the main channel, crosses the river at **Windmill Point**, Mile 49.9S.

(78) **Powell Creek**, Mile 53S, has depths of 7 feet through a narrow channel across the mudflats at the entrance and for 2 miles upstream. The creek is a good storm anchorage.

(79) A highway lift bridge with a clearance of 50 feet down and 145 feet up crosses the James River at **Jordan Point**, Mile 56.4S. The bridgetender monitors VHF–FM channel 13; call sign KQ–7167. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.)

(80) **Jordan Point Marina**, on the east side of Jordan Point at the south end of the bridge, may be reached through a channel marked by private piles. Berths, gasoline, diesel fuel, water, electricity, and some marine supplies are available.

Chart 12252

(81) **Hopewell**, Mile 59W, is the site of several industries and the terminus of a branch railroad to Petersburg. Allied-Signal, Hopewell Plant Pier (37°18'28"N., 77°15'55"W.), about 0.8 mile southeastward of **City Point**, is 622 feet long with berthing on both north and south sides and has 25 feet reported alongside. The pier is used for receipt of phenol, sulphur, oleum, and fuel oil for plant consumption and shipment of dry bulk ammonium sulfate.

(82) Regional Enterprises, Hopewell Wharf (37°18'46"N., 77°16'11"W.), has a 90-foot face with 300 feet of berthing space and 23 feet alongside. The wharf receives crude oil, petroleum products and fertilizer.

(83) Tidewater Materials, Hopewell Concrete Plant Wharf (37°18'49"N., 77°16'16"W.) has a 400-foot face

with 400 feet of berthing space and 10-18 feet alongside. The wharf receives sand and gravel.

(84) **Appomattox River**, Mile 59.5W, leads to a small-boat harbor on the east side, about 7.5 miles above the entrance, and to the city of Petersburg, about 10 miles above the mouth. In 2008, the midchannel controlling depth was 5.9 feet to Daybeacon 14, thence 2 feet at midchannel to about 200 yards below the I–95 bridge. The channel through the flats at the mouth is marked by a buoy, lights, and daybeacons.

(85) The highway bridge, 1.1 miles above the mouth of Appomattox River, has fixed spans with a clearance of 40 feet. The Hopewell City Marina, on the south side 0.2 mile west of the bridge, has a small-boat basin with depths of about 6 feet off the T-pier.

(86) The railroad bridge, 2.4 miles above the mouth, has a swing span with a clearance of 10 feet. (See **117.1 through 117.59 and 117.995**, chapter 2, for drawbridge regulations.) An overhead power cable 0.8 mile above the bridge has a clearance of 113 feet.

(87) A fixed highway bridge with a clearance of 40 feet is about 3.1 miles above the mouth.

(88) At the small-boat harbor, 7.5 miles above the entrance of Appomattox River, some supplies and berths are available; gasoline and diesel fuel can be obtained by truck. Repairs can be made; marine railway to 100 feet.

(89) The I–95 bridge, 8.0 miles above the mouth, has a fixed span with a clearance of 40 feet.

(90) The channel in Appomattox River is blocked at Petersburg by a dam. A diversion channel joins the river below the dam with the river above the dam. Their lower junction is about 2.9 miles below the dam; the upper junction is immediately above the dam. An overhead power cable 0.2 mile below the dam has a clearance of 51 feet.

(91) **Petersburg**, about 10 miles above the mouth of Appomattox River, is an important rail center. The bulkheads at the city are in poor condition. Fuel and supplies are not available at the waterfront, but all kinds of small-craft supplies may be obtained in the city.

(92) Above its junction with Appomattox River, James River becomes narrow and winding. The bends are often referred to as the Curles of the River, and the 14-mile section from Hopewell to Wilton has been called The Corkscrew. There is no contemporary hydrography for the Curles of the James River, and severe shoaling has been reported. Mariners are advised to use extreme caution and local knowledge.

(93) **Turkey Island Bend**, 2 miles north of Hopewell, has depths of 10 to 30 feet around its 6-mile length, but is seldom used except by pleasure boats because the main channel now leads northwestward through Turkey Island Cutoff; most of the landings along the bend are in ruins. In 2009, severe shoaling was reported throughout the bend; extreme caution is advised. The north and west sections of the bend afford excellent anchorages, because the river current has been greatly diminished by the cutoff and winds from any direction have little effect; the bottom is mostly soft mud.

(94) **Turkey Island Cutoff**, Mile 61, is 1 mile long and well marked by lights.

Cable ferry

(95) A cable ferry crosses the lower part of Turkey Island Cutoff at Mile 61.1, providing vehicular access to Turkey Island, which is a National Wildlife Refuge. The single cable is moored ashore at both sides; when the self-propelled barge is underway, the cable is picked up to the deck level of the barge, which is about 3 feet above the water, and then dropped astern. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY**.

(96) An overhead power cable with a reported clearance of 171 feet crosses the river at Mile 62.3.

(97) **Jones Neck Cutoff**, Mile 64, extends about 1 mile northward and westward; the cutoff is well marked by lights. The old river bend around **Jones Neck** has depths of 13 to 44 feet along its 4.5-mile length, but is now little used; most of the landings are in ruins. In 2009, extreme shoaling was reported throughout the river bend; extreme caution is advised.

(98) A fixed highway bridge with a clearance of 145 feet crosses the James River about 0.6 mile below Dutch Gap

(99) **Dutch Gap**, Mile 66.5, the first canal dug in the United States, was cut through in 1611. The main channel extends west-northwestward through **Dutch Gap Cutoff** (**Aiken Swamp-Dutch Gap Cutoff**), which is about a mile long and is marked by lights at both ends. There is a gravel basin in **Hatcher Island**, on the north side of the cutoff.

(100) The old river bend around Hatcher Island has depths of 7 to 25 feet along its 2-mile length. **Richmond Yacht Basin**, north of Hatcher Island, has piers with depths of about 12 feet at their outer ends. The preferred passage is east of Hatcher Island. In 2009, it was reported that the passage around Hatcher Island had significant shoaling: extreme caution and local knowledge are advised. A small marine railway at the yacht club can handle boats up to 40 feet for repairs; gasoline is available. A fixed highway bridge over the western entrance to the bend has a width of 40 feet and a clearance of 21 feet.

(101) The old channel southward from Dutch Gap has depths of 9 feet or more for over 1 mile to the gravel basin in **Farrar Island**.

(102) A concrete-and-steel wharf of the Virginia Electric and Power Co. (37°22'57"N., 77°22'44"W.), at Mile 67.5S, has main channel depths at the face. A privately maintained light is shown from the end of the wharf. The overhead cable just above the wharf has a clearance of 165 feet. About 300 yards westward is another cable with a clearance of 166 feet.

(103) A small-boat basin is at Mile 68.6N. In 1980, depths of 6 feet were reported in the basin. Berths, gasoline, and limited supplies are available. Repairs can be made;

marine railway, 45 feet. A chemical plant pier at Mile 71.3S has depths of 20 feet alongside.

(104) The oil wharf at **Drewrys Bluff**, Mile 71.7W, has 350 feet of berthing space with dolphins and main channel depths at the face. Vessels are requested to reduce speed when passing the wharf.

(105) **Falling Creek** (37°26.2'N., 77°25.7'W.) enters James River at Mile 72.4W. In 1999, a fixed highway bridge was under construction with a design clearance of 145 feet about 0.35 mile NE of Falling Creek.

(106) **Richmond**, the capital of Virginia, is at Mile 78E. Traffic to and from the city consists chiefly of petroleum products, sand and gravel, general cargo, and tobacco. Commercial navigation in the river proper ends at the city wharves, but small boats can go 1 mile farther. The turnpike fixed highway bridge just below **Mayos Island** has a clearance of 40 feet.

Weather

(107) Richmond's climate might be classified as modified continental. Summers are warm and humid and winters generally mild. The mountains to the west act as a partial barrier to outbreaks of cold, continental air in winter, the coldest air being delayed long enough to be modified, then further warmed as it subsides in its approach to Richmond. The open waters of the Chesapeake Bay and Atlantic Ocean contribute to the humid summers and mild winters. The coldest weather normally occurs in late December and in January, when low temperatures usually average in the upper twenties (-2.7° to 1.5°C) and the high temperatures in the upper forties (8.3° to 9.5°C). Temperatures seldom lower to zero (-17.8°C). The average annual temperature for Richmond is 58.5°F (14.7°C) with an average high of 68.8°F (20.4°C) and an average low of 47.6°F (8.7°C). July is the warmest month with an average temperature of 78.4°F (25.8°C) and January is the coolest month with an average temperature of 38°F (3.3°C). The warmest temperature on record at Richmond is 105°F (40.6°C) recorded last in July 1977 while the coldest temperature is -8°F (-22.2°C) recorded in February 1979. Each month, June through September has recorded temperatures in excess of 100°F (37.8°C) while each month, October through May has seen temperatures below freezing (0°C).

(108) Precipitation is rather uniformly distributed throughout the year with a slight maximum during July and August. However, dry periods lasting several weeks do occur, especially in autumn when long periods of pleasant, mild weather are most common. There is considerable variability in total monthly amounts from year to year so that no one month can be depended upon to be normal. The average annual precipitation totals 42.8 inches (1087 mm). July is the wettest month averaging 5.16 inches (131.1 mm) and February the driest, averaging just under 3 inches (76.2 mm). Snow has been recorded during 7 of the 12 months, October through April. Snowfalls of 4 inches (101.6 mm) or more occur on an average of once a year. Snow usually remains on the ground only 1 or 2 days at a time. Average annual snowfall is 13 inches (330.2 mm). The greatest 24-hour snowfall, 13.3 inches (337.8 mm) occurred on two occasions; January 1980 and February 1983. Ice storms (freezing rain or glaze) are not uncommon in winter, but they are seldom severe enough to do any considerable damage. The James River reaches tidewater at Richmond where flooding has occurred in every month of the year, most frequently in March and only twice in July. Hurricanes and less severe storms of tropical origin have been responsible for most of the flooding during the summer and early fall. Damaging storms occur mainly from snow and freezing rain in winter and from hurricanes, tornadoes, and severe thunderstorms at other seasons. Damage may be from wind, flooding, or rain, or from any combination of these. (See Appendix B for **Richmond climatological table**.)

(109) Since 1950, nine tropical storms have directly influenced the Richmond area. The most noteworthy was the remnants of hurricane Hazel in 1954. Hazel quickly became a destructive cold-core low after coming ashore north of Myrtle Beach, South Carolina and was still packing winds of greater that 70 miles per hour (61 knots) by the time it approached Richmond. At this time it was moving northward at speeds greater than 50 miles per hour (43 knots).

(110) The National Weather Service maintains an office at Byrd Field; **barometers** can be compared there or checked by telephone.

Towage

(111) Tug service is available at Richmond to assist in docking and undocking, if desired.

Quarantine, customs, immigration, and agricultural quarantine

(112) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(113) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(114) Richmond-Petersburg is a **customs port of entry**.

(115) The Port of Richmond's **harbormaster** maintains an office at the Department of Public Works, City of Richmond, 800 E. Broad Street, Richmond, VA 23219. He is responsible within the port for the assignment of berths and anchorages.

Wharves

(116) City-owned facilities at the Port of Richmond have turning basins and are served by railway tracks and highways; water is available. The alongside depths given are reported. (For the latest controlling depths, contact the operator.)

(117) **Port of Richmond, Deepwater Terminal** (37°27'22"N., 77°25'14"W.): 1,584-foot face, 19 feet alongside; deck height, 24.5 feet; livestock loading

facility; 300,000 square feet covered storage; 39 acres open storage; three crawler cranes to 350-ton capacity; receipt and shipment of conventional and containerized general cargo including tobacco, forest, paper products, chemicals, and cocoa; shipment of scrap iron and livestock; operated by Federal Marine Terminals, Inc. In 1996, a submerged obstruction was reported close to James River Light 168 in about 37°29.4'N., 77°25.3'W., just below the bend in the river at Goode Creek.

(118) There are eight oil barge wharves and two barge wharves that handle gravel and construction material at Richmond. Most are on the west bank between Falling Creek and across from Richmond Upper Marine Terminal.

Supplies

(119) Gasoline and diesel fuel are available by tank truck. Some marine supplies may be obtained in Richmond, but major supplies must be obtained in the Hampton Roads area.

Repairs

(120) There are no drydocking or major repair facilities in the Port of Richmond; the nearest such facilities are in the Hampton Roads area.

(121) The **Kanawha Ship Canal,** is at the north end of the Richmond waterfront. The canal's lock gate mechanisms are damaged and inoperable, restricting all passage.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12248	Newport News, James River	36°58'N/76°26'W	2.9	2.7	0.1
12248	Menchville, James River	37°05'N/76°32'W	2.9	2.7	0.1
12248	Burwell Bay, James River	37°03'N/76°40'W	2.8	2.6	0.1
12251	Jamestown Island, Church Point	37°12'N/76°47'W	2.3	2.1	0.1
12251	Wright Island Landing, Chickahominy River	37°21'N/76°53'W	2.5	2.3	0.1
12251	Claremont, James River,	37°14'N/76°57'W	2.1	1.9	0.1
12251	Jordan Point, James River	37°19'N/77°13'W	2.8	2.6	0.1
12252	City Point, James River	37°19'N/77°16'W	2.8	2.5	0.1
12252	Richmond River Locks, James River	37°32'N/77°25'W	3.7	3.4	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 November 2011

General Index of Chart Coverage in Chapter 11
(see catalog for complete coverage)
77°30'
77°
76°30'
38° 30'
38°
37° 30'
37°
MARYLAND
VIRGINIA
Fredericksburg
POTOMAC RIVER
12237
RAPPAHANNOCK RIVER
Tappahannock
12235
GREAT WICOMICO RIVER
12244
MATTAPONI RIVER
PAMUNKEY RIVER
Richmond
12243
West Point
PIANKATANK RIVER
YORK RIVER
MOBJACK BAY
Yorktown
12241
POQUOSON RIVER
BACK RIVER
12238
JAMES RIVER
Norfolk

Chesapeake Bay, York and Rappahannock Rivers

(1) This chapter describes the western shore of Chesapeake Bay from Old Point Comfort to the Potomac River including its principal tributaries Back, Poquoson, York, Piankatank, Rappahannock, and Great Wicomico Rivers, and Mobjack Bay. Also discussed are the ports of Yorktown, Fredericksburg, West Point, Tappahannock, Kilmarnock, and Reedville, as well as several of the smaller ports and landings on these waterways.

COLREGS Demarcation Lines

(2) The lines established for Chesapeake Bay are described in **80.510**, chapter 2.

Charts 12221, 12225

(3) The western shore of Chesapeake Bay from Old Point Comfort to the Potomac River is mostly low. York and Rappahannock Rivers are broad and deep at their entrances and are navigable for long distances.

(4) **Fishtraps** are thicker in this area than in any other part of the bay.

Ice

(5) Ice is seldom encountered this far south in the bay, but may be found in the upper parts of some of the tributaries.

Channels

(6) The Federal project for Chesapeake Bay provides for depths of 50 feet in the main channel between the Virginia Capes and Fort McHenry, Baltimore. There are three dredged sections in the lower Chesapeake Bay: the first off Cape Henry, just above the Virginia Capes; the second off York Spit, 11 to 22 miles above the Capes; and the third off Rappahannock Spit, 40 to 46 miles above the Capes; they are well marked. (See Notice to Mariners and latest editions of the charts for controlling depths.)

(7) **York Spit Channel** begins 11 miles above the Capes and extends northward another 11 miles. The current velocity is about 1.0 knot in the channel.

Quarantine, customs, immigration, and agricultural quarantine

(8) (See Chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(9) Quarantine is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, Chapter 1.) The **quarantine anchorage** is southeastward of York Spit Channel Lighted Buoy 38.

Chart 12222

(10) **Horseshoe** is a shoal that extends several miles out from the shore between Old Point Comfort and Back River, 6.5 miles to the northward. The southern edge of the shoal lies along the north side of the main channel into Hampton Roads; the eastern half has depths of 13 to 18 feet, and the western half, 6 to 11 feet. Local vessels drawing 7 feet or less use the lanes through the fishtraps on the Horseshoe when navigating between Hampton Roads and York River or Mobjack Bay. The tidal current velocity is 0.5 knot over the Horseshoe and is rotary, turning clockwise.

(11) A naval **restricted area** extends eastward and southward of Old Point Comfort, and a **danger zone** of the **Fort Monroe** firing range extends to seaward from a point 1.5 miles northward of the point. (See **334.350 and 334.360**, chapter 2, for limits and regulations, respectively.)

(12) **Salt Ponds** is entered through a privately dredged inlet on the west side of Chesapeake Bay about 4 miles north of Old Point Comfort. The entrance is marked by private aids. In 1980, the controlling depth just inside the inlet was 6.5 feet with shoaling reported in May 2010; caution is advised. Sand dunes protect Salt Ponds from the open waters of the bay. A marina is on the east and west sides of Salt Ponds.

(13) **Back River** empties into the west side of Chesapeake Bay 7 miles northward of Old Point Comfort between **Northend Point** and **Plumtree Island**, 1 mile to the northward. A firing and bombing **danger zone** is north of the entrance to Back River. (See **334.340**, chapter 2, for limits and regulations.) The approach to Back River, from southeastward through a lane in the fishtraps, is well marked.

(14) About 2 miles above the mouth, Back River divides into **Northwest Branch** and **Southwest Branch,** which have general depths of 2 to 5 feet. The **Langley Field** hangars, water tanks, and wind tunnel back of Willoughby Point, between the branches, can be seen for many miles. In 1979, the marked channel that extends 3 miles from the mouth of the river to the Langley Field fuel pier on the west side of Southwest Branch had a controlling depth of about 12 feet. In 1982, shoaling to 3 feet was reported on the south side of the channel about 150 yards east-northeastward of Light 9. In 1985, a bare shoal was reported to extend about 60 feet north of Light 9. The Langley Yacht Club, just south of the fuel pier, has gasoline and supplies; the depth in the basin

is about 4 feet. A marked side channel to the Langley Field boathouse, on the south side of Northwest Branch 3 miles above the river mouth, has a controlling depth of about 7 feet.

(15) A **restricted area** extends along the shoreline of Langley Air Force Base on the west shore of southwest Branch and Northwest Branch. (See **334.275,** chapter 2, for limits and regulations.)

(16) A marina on the south side of Back River, just east of **Windmill Point** 1 mile above the mouth, has gasoline, diesel fuel, and supplies; marine railways can handle boats up to 40 feet. The reported depth to the marina is about 6.5 feet.

(17) **Harris River**, on the south side of Back River west of **Windmill Point,** has depths of 6 feet in a marked channel that leads to a marina inside **Stony Point.** Some supplies, gasoline, diesel fuel, and berths are available. Repairs can be made; mobile lift, 20 tons.

(18) **Messick Point** is on the north side of Back River, 1.5 miles above the mouth. A dredged channel leads northward of Back River Channel Daybeacon 16 to a small-craft facility and turning basin on the east side of Messick Point. In 2010, the controlling depth was 4.8 feet in the channel with 4.4 feet in the turning basin.

(19) The side-by-side highway and rail bridges over Southwest Branch, 1.5 miles above Willoughby Point, have fixed spans with a minimum width of 20 feet and a clearance of 6 feet.

(20) Between Back River and Poquoson River are shoals that extend 1 to 3 miles from shore; on the shoals are scattered oyster rocks that bare, or nearly bare, at low water. Strangers should stay outside the 6-foot curve. A buoyed lane, about 0.6 mile outside the 6-foot curve, extends northwestward through a fishtrap area from about 2.4 miles east-southeast of Northend Point to about 1.6 miles west-southwest of York Spit Light. In 1980, poles were reported in the lane in about 37°09'54"N., 76°16'21"W., 37°10'45"N., 76°16'42"W., and 37°10'51"N., 76°16'48"W.

Chart 12238

(21) **Poquoson River**, which empties into Chesapeake Bay 5 miles northwest of Back River, has depths of 7 feet to the village of **Yorkville,** on the west side 2.5 miles above the mouth. The marked approach to the river is from northeastward and is clear of fishtraps for a width of 400 yards. There is a light on either side of the entrance.

(22) **Bennett Creek**, on the southeast side of the Poquoson River mouth, has depths of 6 feet or more for 1.3 miles to **Easton Cove,** which makes off to the eastward. The channel is marked as far as White House Cove, on the west side of Bennett Creek 0.8 mile above the mouth; the channel in White House Cove is marked by daybeacons and has depths of 8 to 2 feet for 0.7 mile above the mouth. A 50-ton mobile hoist at the basin on the north side of the cove entrance can handle boats for hull repairs. Gasoline and diesel fuel are available at a marina near the south end of the cove. A "no wake" **speed limit** is in effect in White House Cove.

(23) **Chisman Creek**, on the north side of the Poquoson River mouth, has depths of 9 feet or more in a narrow channel for 1.3 miles above its entrance. There are boatyards on the south side, 1 mile above the entrance; gasoline is available; the largest marine railway can handle boats up to 100 feet for hull repairs. The creek is marked by daybeacons and a light.

(24) **Back Creek**, 1.5 miles south of York River, has depths of 7 feet for 2 miles. The entrance is marked by lights and daybeacons. The creek is used by oystering and fishing boats. A State-owned wharf on the south side, 1.4 miles above the mouth, has a depth of about 9 feet at the face. Gasoline, diesel fuel, limited berthing, and some supplies are available at a marina on the south side, 1.8 miles above the mouth; repairs can be made.

(25) Passage northward from Back Creek to York River can be made through the **Thorofare,** about 0.8 mile from the mouth of Back Creek. In 2010, the dredged channel, marked by lights and daybeacons, had a controlling depth of 1.2 feet.

Charts 12238, 12241, 12243

(26) **York River** formed by the junction of Mattaponi and Pamunkey Rivers 29 miles above the mouth, is 15 miles northward of Old Point Comfort and 26 miles by the main channel from Cape Henry. Traffic on York River consists chiefly of pulpwood, petroleum products, military supplies, and shellfish. Drafts of vessels using the river are mostly 18 feet or less, but deep-draft vessels navigate the lower reaches.

(27) York River has a broad and fairly straight channel, is well marked and easily followed. Depths are as much as 80 feet off Yorktown. In 2010, the controlling depth in the dredged sections of the river was 16 feet to West Point. With the exception of the naval areas described later, vessels can anchor in the wider parts of York River channel.

(28) The currents in York River follow the general direction of the channel except in the narrowest parts where there is a tendency to set a vessel onto the shoals. The velocity varies throughout the river; the times of slack water and strengths of current are later going up the river. The normal conditions are subject to change by winds and freshets.

Ice

(29) **Ice** sometimes interferes with navigation of York River for short periods during severe winters, but in ordinary winters there is no interruption below West Point.

(30) **Caution**.–Mariners transiting the York River are advised to use caution in the vicinity of the Goodwin

Islands. The Virginia Pilots periodically anchor large tankers in about 37°14'06"N., 076°25'25"W. These vessels may be as large as 900 feet in length. The Virginia Pilot Tower may be contacted on VHF-FM channel 11 for further information. Ships and craft underway in York River are to proceed at reduced speed and exercise extreme caution in order to reduce generated water motion and to prevent damage to the Virginia Institute of Marine Science equipment and facilities located downstream from the Coleman Memorial Bridge, near Gloucester Point, ships and craft loading volatile fuels at the Giant Industries refinery pier, and other craft and property close to the shores of the river. In no instance should the **speed** of ships underway upriver from the Tue Marshes Light exceed 12 knots.

Pilotage, York River

(31) Pilotage on the York River 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 to operate in these waters.

(32) The Chesapeake and Interstate Pilots Association offers pilot services to U.S. vessels, engaged in the coastwise trade, and public vessels to Yorktown. Arrangements for pilots may be made through ships' agents or the pilot office in Norfolk (telephone, 757-855-2733). Pilots will meet vessels entering from sea at Cape Henry (discussed in chapter 9), and will meet a vessel at its port if it is on the Chesapeake Bay and its tributaries or Delaware Bay and River and provide pilot services directly to the York River. The Virginia Pilots Association offers pilotage to all vessels. Pilot service above Cheatham Annex is available only during daylight. (See Pilotage, chapters 3 and 9.)

Supplies

(33) **Supplies** are available at Yorktown, West Point, and at other places described in this chapter.

Repairs

(34) Repairs can be made to small vessels in Perrin River, Sarah Creek, Wormley Creek, and at other places.

Chart 12238

(35) **York Spit** extends outward along the northeast side of the York River approach channel for 7 miles from Guinea Marshes; the inner half of the spit has depths of 1 to 6 feet, and the outer half 10 to 20 feet.

(36) **York Spit Light** (37°12'35"N., 76°15'15"W.), 30 feet above the water, is shown from a multi-pile structure with a red and white diamond-shaped daymark, in depths of 11 feet near the outer end of the spit. The light is 19.8 miles above Cape Charles.

(37) The York River entrance channel is well marked and extends from about 7 miles southeast of York Spit Light to about 3 miles northwest of the light. A Federal project provides for a depth of 37 feet in the entrance channel. (See Notice to Mariners and latest editions of the charts for controlling depths). There are natural depths in excess of 37 feet from the north end of the dredged section to the naval installation 5 miles above Yorktown bridge.

(38) About 1.5 miles northwest of York Spit Light, a buoyed lane extends northeastward through an area where submerged fishtraps are commonly found. The lane has depths of 15 feet or more and can be used by medium-draft vessels approaching York River from northward.

(39) The Swash Channel, which bisects York Spit about 5 miles northwest of York Spit Light has a controlling depth of about 7 feet; it is marked by a light and daybeacons. The channel shows up well on a bright day.

Chart 12241

(40) The entrance to York River is between **Tue Point** and **Guinea Marshes**, 25.9 miles above the Virginia Capes.

(41) **Tue Marshes Light** (37°14'07"N., 76° 23'11"W.), 41 feet above the water, is shown from a platform with a green and white diamond-shaped daymark, in depths of 4 feet 0.3 mile north of Tue Point.

(42) In 2002, a submerged piling was about 600 yards east-northeast of Tue Marshes Light in about 37°14'16"N., 76°22'47"W. Another submerged piling was about 700 yards west-northwest of the light in about 37°14'09"N., 76°23'35"W.

(43) **Perrin River**, on the north side of York River 2 miles above the mouth, has depths of 6 feet or more in the approach and through a narrow marked channel to the wharf at **Perrin,** on the north side 0.3 mile above the entrance. A marina on the east side has gasoline, diesel fuel, some supplies, and a 20-ton mobile hoist; hull and engine repairs can be made. Gasoline and diesel fuel can be obtained at several of the oysterhouse wharves, on the east side of the river entrance; depths of 4 to 7 feet are alongside the wharves.

(44) The Amoco offshore pier, on the south side of York River 3.3 miles above the mouth, has reported depths of 40 feet along the 1,240-foot outer face. The pier, connected to shore by a 0.5 mile long catwalk, is marked at its easterly end by a private light.

(45) The intake for an electric powerplant, on the south side of the river 4.2 miles above the mouth, is marked by two lights.

(46) **Wormley Creek** and **West Branch** have a common entrance on the south side of York River, 4.5 miles above the mouth; a light marks the entrance. A privately dredged channel leads through the entrance to the Coast Guard Reserve Training Center basin and pier on the north side of West Branch 0.8 mile above the entrance light. In 2000, the channel marked by a

light, buoys and daybeacons, had a controlling depth of 4.8 feet to the Coast Guard Basin, thence 5 feet in the northern half and 2.6 to 5 feet in the southern half of the basin, except for shoaling to 1.5 feet along the western edge. In 2008, it was reported that the channel to the Coast Guard Basin had a controlling depth of 5 feet at or near the centerline. Local knowledge is advised. Gasoline, diesel fuel, berths, water, electricity, a 37-ton mobile lift, and marine supplies can be obtained at a marina on the east side of Wormley Creek just above the entrance; hull and engine repairs can be made.

(47) The Coast Guard T-pier (37°13.6'N., 76°28.7'W.), on the south side of York River 5 miles above the mouth, has depths of 30 feet reported at the outer end.

(48) A **naval explosives handling berth** is northward of the Coast Guard pier. (See **334.260,** chapter 2, for limits and regulations). In 2002, an obstruction was within the naval explosives handling berth 1150 yards northward of the Coast Guard T-pier in about 37°14'09"N., 76°28'36"W.

(49) **Sarah Creek**, on the north side of York River 6 miles above the mouth, has depths of 7 feet through the marked entrance channel and for about 0.8 mile up both its branches. A large yacht haven, on the west side 0.3 mile above the entrance, has supplies, gasoline, diesel fuel, a 35-ton lift, a pumpout station and numerous berths. Repairs can be made at a boatyard 0.3 mile up Northwest Branch; marine railway, 76 feet; largest lift, 60 tons.

(50) A fixed highway bridge with a clearance of 6 feet and channel width of 47 feet crosses Northwest Branch about 0.8 mile above its mouth.

(51) **Yorktown**, the historic Revolutionary War town, is on the southwest side of York River 6.7 miles above the mouth. High on the bluff in the southerly part is the **Yorktown Monument**,and a group of buildings is prominent on the shore behind the wharves. The main part of the town is not visible from the river. **George P. Coleman Memorial Bridge,** from Yorktown to Gloucester Point, has twin spans with clearance of 60 feet; the two spans open clockwise simultaneously. The bridgetender monitors VHF-FM channel 13; call sign KQ-7166. (See **117.1 through 117.49 and 117.1025,** chapter 2, for drawbridge regulations.)

(52) The waterfront in Yorktown was completely rebuilt in 2005. It has two floating dock piers which can handle vessels up to 53 feet in length. Depths of 10 feet are reported to be alongside the dock piers. A pumpout station is available. There is no fuel available with a pumpout facility available. The dockmaster can be contacted on VHF-FM Channel 16 or by writing; Dockmaster, 425 Waterstreet, P.O. Box 219, Yorktown, VA 23690.

(53) **Gloucester Point** is a village at the northeast end of Coleman Bridge. There are several piers and buildings on the low point, and the red brick building of the Virginia Institute of Marine Science is about 500 yards northeastward. The long T-head pier (37°14'46"N., 76°30'02"W.), owned by the Institute, has reported depths of 8 feet at the face. A shorter pier of the Institute is about 150 yards to the northward; depths of 6 feet are reported at the face.

(54) The **Yorktown Naval Weapons Station** piers on the southwest side of York River, 8 miles above the mouth, have depths of about 29 to 39 feet at their outer ends. A **prohibited area** and a **restricted area** for mine service testing are off the piers. (See **334.260,** chapter 2, for limits and regulations.) A **naval anchorage** begins off the Naval Weapons Station piers and extends upriver about 4 miles. (See **110.166,** chapter 2, for limits and regulations.)

(55) The **Naval Supply Center** piers at **Cheatham Annex Depot**, on the southwest side of York River 11.5 miles above the mouth, have reported depths of 22 feet at the southeasterly T-pier, and 20 feet alongside the inside face and 21.5 feet alongside the outside face of the northwesterly L-pier; greater depths are close off the outside faces of both piers. The piers are within a **naval restricted area.** (See **334.270,** chapter 2, for limits and regulations.)

Chart 12243

(56) **Queen Creek** (37°18.1'N., 76°36.9'W.), on the southwest side of York River 13 miles above the mouth, has depths of about 5 feet with local knowledge through a marked channel across the flats at the entrance and deeper water through a narrow channel inside for 2.7 miles to **Hawtree Landing**. The channel inside is marked by daybeacons to a point about 0.6 mile below Hawtree Landing. Stakes on either side of the entrance mark the limits of the State's experimental oyster beds.

(57) **Aberdeen Creek**, on the northeast side of York River 14 miles above the mouth, has a marked dredged channel leading to a turning basin and public landing 0.4 mile above the entrance. In 2004, the midchannel controlling depth was 1.3 feet, thence depths of 1 to 2 feet in the basin. Gasoline and diesel fuel are available at a seafood company wharf just north of the public landing.

(58) The ruins of a long T-head pier are at **Clay Bank,** on the northeast side of York River 15 miles above the mouth.

(59) **Poropotank Bay**, on the northeast side of York River 22 miles above the mouth, has depths of 5 feet at the entrance; the best water favors the eastern side which is marked by bush stakes. From the entrance, depths of about 5 feet can be carried 4 miles through **Morris Bay** and **Poropotank River** to **Miller Landing.** There are several other landings along the river. The channel is usually marked by bush stakes, but is crooked and narrow in places and difficult to navigate without local knowledge.

(60) **West Point**, at the junction of Mattaponi and Pamunkey Rivers 29 miles above the mouth of York River, has waterborne commerce in pulpwood, paper products, and petroleum. The town is the terminus of

a Southern Railway branch line. The pulp, paper, and paperboard wharves just above the Eltham Bridge have reported depths of 16 feet alongside.

(61) At West Point, the maximum current velocity is 0.8 knots on the flood in Mattaponi River, and 0.9 knots on the ebb in Pamunkey River. Broken-off piling extends off the south side of West Point.

(62) A public pier is at the southeast end of West Point, at the mouth of Mattaponi River. Gasoline is available at an oil wharf with depths of 5 to 15 feet alongside 0.4 mile south of the Lord Delaware Bridge; diesel fuel can be delivered by truck. An oil pier 0.2 mile above the bridge has depths of 18 feet alongside. Supplies can be obtained in town.

Chart 12244

(63) **Mattaponi River**, which empties into York River eastward of West Point (37°31.7'N., 76°47.7'W.), is one of two tributaries that combine to form York River. Traffic on Mattaponi River consists chiefly of pulpwood. Drafts of vessels using the river above West Point usually do not exceed 10 feet.

(64) Controlling depths in Mattaponi River are as follows: 12 feet to **Courthouse Landing**, 13 miles above the mouth; thence 9 feet for 10 miles to **Locust Grove**; and thence 2 feet to **Aylett**, 32 miles above the mouth.

(65) The channel in Mattaponi River is unmarked and is difficult to navigate without local knowledge. Freshets occur at irregular intervals, being more severe in March and April, and have reached a height of 17 feet above low water at Aylett, though this is exceptional; the freshet rise is negligible at and below West Point.

(66) The Lord Delaware Bridge over Mattaponi River at West Point has a fixed span with a clearance of 55 feet. Overhead power cables about 1.8 and 13 miles above the mouth have clearances of 62 feet and 90 feet, respectively.

(67) The **Walkerton** highway bridge, 24.5 miles above the mouth of Mattaponi River, has a fixed span with a clearance of 20 feet. Two fixed bridges cross the river at Aylett, 32 miles above the mouth; minimum clearance is 20 feet. The minimum clearance of the overhead power cables between the bridges at Walkerton and Aylett is 42 feet.

(68) **Pamunkey River**, the westerly of the two tributaries that form York River, has many landings along its banks. Traffic on the river consists chiefly of pulpwood; there is a grain elevator platform at **Port Richmond,** 2 miles above the mouth. Vessels with drafts up to 12 feet navigate the river to Port Richmond.

(69) Controlling depths in Pamunkey River are about 12 feet from the mouth to **Cumberland Landing,** 20 miles above the mouth, thence 8 feet to **White House,** 28 miles above the mouth, and 4 feet to the Newcastle Bridges 46 miles above the mouth. Freshets occur at irregular intervals, being more severe in March and April.

(70) Pamunkey River is easy to navigate as far as **Brickhouse Landing,** 16 miles above the mouth; farther up, navigation is difficult without local knowledge. Freshwater is available at some of the landings, and the river water is fresh above Cumberland Landing. Several narrow cutoffs have depths enough for small boats, but their use requires local knowledge. Above **Retreat,** 36 miles above the mouth, the river is covered with floating debris and snags.

(71) The Eltham Bridge over Pamunkey River at West Point has a bascule bridge with a clearance of 56 feet. The bridgetender monitors VHF-FM channel 13; call sign KQ-7168. (See **117.1 through 117.59 and 117.1023**, chapter 2, for drawbridge regulations.) Power cables crossing the river about 2 and 14.6 miles above the mouth have clearances of 60 and 90 feet, respectively. The railroad bridge at White House has a swing span with a clearance of 4 feet; the easterly opening is used. (See **117.1 through 117.49,** chapter 2, for drawbridge regulations.)

Chart 12238

(72) **Mobjack Bay**, which is entered between Guinea Marshes at the shore end of York Spit, and New Point Comfort, 4 miles east-northeastward, includes several tributaries, the most important being East, North, Ware, and Severn Rivers. The bay is obstructed by extensive shoals, but has depths of 22 feet in the entrance and 15 feet for considerable distances into the tributaries. Many of the shoals are marked by lights and buoys.

(73) The only prominent marks in the approach to Mobjack Bay are York Spit Light on the south and the white tower of the abandoned lighthouse on New Point Comfort on the north. The approach channel extends between fishtrap buoys; numerous crab pots exist shoreward of these buoys. Good anchorage, sheltered from all but southerly and southeasterly winds, can be found in the bay. Small craft find safe anchorage in the bight westward of New Point Comfort and in the rivers and creeks.

(74) **New Point Comfort** is the south end of a low, partly wooded island which is separated from the mainland by **Deep Creek,** a crooked and unmarked natural channel. The pile remains of **Bayside Wharf,** visible at high water 1.5 miles northwest of New Point Comfort, extend about 0.4 mile channelward.

(75) **Davis Creek**, 1.6 miles northwest of New Point Comfort, has a marked dredged channel leading to a public landing in the western arm about 0.8 mile above the entrance. In 2009, the controlling depth was 0.6 foot from the entrance to the turning basin, thence 9.6 feet in the basin. Depths of 10 feet are alongside the face of the public landing. Several wharves are on the shore in the upper part of the creek; gasoline and diesel fuel are available.

(76) **Pepper Creek**, 3 miles northwest of New Point Comfort, has depths of 4 feet for about 0.7 mile above the entrance. The approach is marked by daybeacons.

(77) **East River**, 5 miles northwest of New Point Comfort, has a marked narrow channel with depths of 10 feet for 3.5 miles above the entrance, and thence 4 feet for another 2 miles to the head. Shoals, sometimes marked by bush stakes, extend for some distance off many of the points above the entrance, but the midchannel is clear.

(78) **Diggs Wharf**, on the east side of East River just inside the entrance, is in ruins. There are no commercial facilities at **Mobjack** opposite Diggs Wharf.

(79) **Williams Wharf**, on the northeast side of East River about 2.5 miles above the entrance, has reported depths of 10 feet alongside the abandoned oysterhouse bulkhead. A boatyard on the western shore opposite Williams Wharf has a 50-foot marine railway; repairs can be made.

(80) **North River**, which empties into the head of Mobjack Bay from northward, is wide, but has long shoals making off from many of the points. The channel has depths of 12 feet for 4 miles and is well marked; depths of 7 feet can be carried 2 miles farther. **Blackwater Creek** empties into North River 3 miles above the mouth. The entrance is marked by a light and depths of 7 feet can be carried for 0.5 mile to a boatyard and a marina just inside the entrance of **Greenmansion Cove;** gasoline, diesel fuel, and some supplies are available. The depth at the face of the dock is 4.5 feet. Hull and engine repairs can be made; marine railway, 42 feet; lift capacity, 5 tons.

(81) **Ware River**, which flows into the head of Mobjack Bay from northwestward, has depths of 15 feet to the mouth of **Wilson Creek**, on the west side 3 miles above the entrance, and 7 feet for another 2 miles. Long shoals, some of which are marked by lights and daybeacons, extend off many of the points. The only commercial landing on Ware River is the J. C. Brown Co. wharf, on the east side about 4 miles above the entrance, which has a depth of about 5 feet off the end; gasoline is available. **Schley**, 0.5 mile inland from the wharf, has a store.

(82) **Severn River**, on the west side of Mobjack Bay, has depths of 18 feet to the junction with **Northwest Branch** and **Southwest Branch,** 8 feet for 1.3 miles in Southwest Branch, and 8 feet for 1.8 miles in Northwest Branch. The most prominent shoals are marked by lights or daybeacons.

(83) A wharf at **Glass,** on the north side of Southwest Branch 1.1 miles above the fork, has depths of about 7 feet to the outer end. Mariners are advised to stay within the marked channel to avoid the 1-foot shoal extending from the point 0.4 mile eastward of the wharf. Gasoline, diesel fuel, and marine supplies are available. Hull and engine repairs can be made; marine railway, 60 feet. A marina on the west side of **Rowes Creek,** 0.5 mile southeast of the Glass Wharf, has gasoline, diesel fuel, marine supplies, and a 10-ton mobile hoist.

(84) **Browns Bay**, 1 mile south of Severn River, is marked by lights at the entrance and by bush stakes inside. Gasoline and diesel fuel are available at a wharf, with a depth of 4 feet at the end, at the head of the bay. A store is at **Severn,** about 1 mile westward of the wharf.

(85) **Dyer Creek**, which empties into Chesapeake Bay 2 miles north of New Point Comfort, has depths of 3 feet in the entrance and 4 to 5 feet inside. The creek is bush-staked, but local knowledge is essential. Overhead power cables across the creek have a least clearance of 17 feet.

(86) **Horn Harbor** is entered through a dredged channel marked by lights 2.4 miles northward of New Point Comfort; lights and daybeacons mark the channel in the upper part of the harbor. In 2011, the controlling depth was 4.5 feet in the dredged channel; thence in 1997, about 5 feet to a point 3.5 miles above the entrance. A cluster of submerged piling of a former fishhouse is on the east side of the channel about 1 mile above the entrance. Traffic consists chiefly of fish, shellfish, and pleasure craft.

(87) The ruins of a fish wharf are at **New Point,** 0.7 mile above the Horn Harbor entrance. A marina, 3.5 miles above the entrance, has berths with electricity, gasoline, diesel fuel, water, ice, a pump-out station, a 15-ton lift, and some supplies. A 50-foot marine railway can haul out boats for repairs.

(88) **Winter Harbor** is entered through a dredged channel marked by lights and daybeacons 4.3 miles north-northeast of New Point Comfort. The channel leads to a turning basin and public landing 1.5 miles above the entrance. In 2010, the controlling depth in the channel to the turning basin was 4 feet, with 1.4 to 6 feet in the turning basin. Commerce in the harbor consists chiefly of fish and shellfish.

(89) **Wolf Trap**, the area of broken ground 6 miles northward of New Point Comfort, has numerous shoal spots 5 to 10 feet deep which extend as much as 3 miles from the western shore of Chesapeake Bay. All the shoal area lies in the fishtrap limits. **Wolf Trap Light** (37°23'26"N., 76°11'22"W.), 52 feet above the water, is shown from an octagonal red-brick dwelling with a square tower on a brown cylinder, in depths of 12 feet near the outer end of the shoal area. The light is 5 miles due west of a point in the main channel 28.8 miles above the Capes.

Chart 12225

(90) The **danger zone** of a naval firing range begins about 4 miles north-northeastward of Wolf Trap Light and extends northward to Tangier Sound Light, just south of **Tangier Island.** (See **334.220**, chapter 2, for limits and regulations.) The danger zone also contains a designated hurricane anchorage for shallow and deep-draft naval vessels. During hurricane warnings, naval ships may be anchored in the fairway; caution is advised.

(91) The ruins of a former degaussing range control tower, 6.2 miles eastward of Wolf Trap Light, are covered

3.5 feet. A lighted bell buoy, 150 yards to westward, marks the obstruction.

Chart 12235

(92) **Piankatank River** is 11 miles northward of Wolf Trap Light. The entrance is between **Cherry Point** (37°31.0'N., 76°17.8'W.), at the north end of **Gwynn Island,** and **Stingray Point,** 2.5 miles to the northward. The entrance point is 45.3 miles above the Virginia Capes. **Stingray Point Light** (37°33'41"N., 76°16'12"W.), 34 feet above the water, is shown from a platform with a green and white diamond-shaped daymark on piles in depths of 6 feet 1.3 miles east of the point.

(93) Traffic on Piankatank River consists of fish, shellfish, and shells. Drafts of vessels using the river are mostly 6 feet, but drafts up to 11 feet are on record. The river has depths of about 18 feet in the approach from northeastward through a buoyed lane in the fish-traps, 16 feet or more to the fixed bridge 9 miles above the mouth, and 7 feet to Freeport, 13.5 miles above the mouth. Lights and buoys mark the lower 6 miles of the river channel.

(94) During severe winters, the Piankatank River is sometimes closed by ice for short periods. Hull repairs can be made to medium-size vessels in Fishing Bay; gasoline and diesel fuel are available.

(95) **Jackson Creek**, on the north side of Piankatank River 1 mile above the mouth, has a dredged entrance channel marked by a light and daybeacons. In 2011, the controlling depth was 4.6 feet in the channel. Inside Jackson Creek, above Daybeacon 10, natural depths of about 8 to 9 feet were available in the middle of the creek channel. Stakes usually define the channel edges. **Deltaville** is at the head of the north arm.

(96) There is a marina along Jackson Creek where fuel, supplies, and berths can be obtained. The largest lift can handle boats to 50 tons for hull and engine repairs.

(97) **Hills Bay**, on the south side of Piankatank River 2 miles above the mouth, has general depths of 14 to 20 feet, and is the approach to Queens Creek and Milford Haven.

(98) **Queens Creek**, at the head of Hills Bay, is entered by a dredged channel that leads across the bar at the entrance and thence to a turning basin about 0.6 mile above the entrance. In 2009, the controlling depth was 6 feet in the entrance channel and basin. The channel across the bar and to the turning basin is marked by lights and daybeacons. A few broken piles that remain of the wooden jetty on the north side of the entrance are marked at the outer end by a daybeacon.

(99) **Milford Haven**, the strait between Gwynn Island and the mainland to the southwestward, is entered from the head of Hills Bay. Traffic on the waterway consists chiefly of fish and shellfish carried in vessels drawing up to 7 feet. In 2010, a marked channel with a controlling depth of 1.4 feet in the left half and 8.2 feet in the right half of the channel, leads from Hills Bay to natural depths of 15 to 8 feet in Milford Haven.

(100) The jetty on **Narrows Point,** at the north side of the Hills Bay entrance to Milford Haven, is marked by a light. The highway bridge from the mainland to Gwynn Island has a swing span with a clearance of 12 feet in the north opening. (See **117.1 through 117.49,** chapter 2, for drawbridge regulations.)

(101) A marina on Gwynn Island just west of the bridge has gasoline, diesel fuel, supplies, and berths; hull and engine repairs can be made; lift, 40 tons, railway, 60-foot long. A public landing pier is on Gwynn Island just east of the bridge. **Milford Haven Coast Guard Station** is 0.2 mile east of the south end of the bridge.

(102) **Callis Wharf** at **Grimstead,** on the Gwynn Island side of Milford Haven 0.7 mile from the jetty, has depths of 9 feet at the face. Gasoline, diesel fuel, and some other supplies are available. A marine railway on the southeast side of the entrance to **Edwards Creek,** 0.5 mile eastward of Callis Wharf, can handle boats up to 35 feet for hull repairs.

(103) A wharf at **Cricket Hill,** on the west side of **Lanes Creek**, opposite Edwards Creek, has gasoline, diesel fuel, and ice; depths of 8 feet are reported at the face.

(104) Milford Haven can also be entered from Chesapeake Bay at the south end of Gwynn Island. This passage, known as **The Hole in the Wall** has a reported controlling depth of about 4 feet and is used by small local boats, but is exposed to heavy seas. The passage is marked by lights, daybeacons, and a buoy. Local knowledge is recommended when transiting the passage.

(105) A fish haven, marked by a private buoy, is about 1.3 miles northeast of the entrance to Hole in the Wall.

(106) **Stutts Creek** enters the southern part of Milford Haven from the southwestward. There are depths of 6 feet or more from Milford Haven to a yacht club on the north side of Stutts Creek, 1.8 miles above the mouth; gasoline and some supplies can be obtained.

(107) **Fishing Bay**, on the north side of Piankatank River 4 miles above the mouth, has depths of 12 to 30 feet and provides good protection from north and east winds. On the east side of the bay is narrow 1-mile-long **Stove Point Neck.** A private 700-foot-long pier with a depth of 8 feet at the outer end extends westward from the middle of the neck. Repairs can be made at boatyards at the north end of the bay; largest marine railway, 150 feet; lift 50 tons. Gasoline, diesel fuel, and supplies are available.

(108) **Moore Creek**, just westward of Fishing Bay, has a privately dredged and maintained channel which is marked by daybeacons and protected by jetties on either side of the channel. In 2002, the controlling depth was reported to be 6.5 feet.

(109) **Cobbs Creek** is on the south side of Piankatank River, 7 miles above the mouth. A channel marked with daybeacons at the entrance and with reported depths of about 6 feet leads to a marina 0.2 mile inside on the west side of the creek. Gasoline, diesel fuel, supplies,

and berths are available; repairs can be made; 40-foot marine railway. An overhead power cable with a clearance of 50 feet crosses the creek about 0.4 mile above the mouth.

(110) **Dixie**, a village on the south side of Piankatank River, is 9 miles above the mouth; gasoline is available in the town. The former oil wharf has depths of about 10 feet off its outer end. The fixed highway bridge just west of the village has a clearance of 43 feet; an overhead power cable close westward of the bridge has a clearance of 68 feet.

(111) About 5.7 miles above the fixed highway bridge, an overhead power cable with a clearance of 64 feet crosses the river.

Charts 12235, 12237

(112) **Rappahannock River** flows into the west side of Chesapeake Bay 45.7 miles by channel from the Virginia Capes. Fredericksburg, 93 miles above the mouth, is the head of practical navigation.

(113) Traffic on the river consists chiefly of pulpwood, shellfish and shells, chemicals, and some sand and gravel. Drafts of vessels using the river seldom exceed 11 feet and are mostly 6 feet or less.

(114) **Mileages** on Rappahannock River, such as Mile 15N and Mile 32W, are the nautical miles above the mid-channel point on a line drawn from Stingray Point to Windmill Point. The letters N, S, E, or W following the numbers denote by compass points the side of the river where each feature is located.

(115) The river has natural depths of 15 feet or more to the bridge at Tappahannock, 37.4 miles above the mouth. Above this point, a Federal project provides for dredging of the bars to provide a channel 12 feet deep to Fredericksburg.

(116) In general, vessels can anchor anywhere near the channel of Rappahannock River where the bottom is soft and the depth suitable. Deep-draft vessels will find good anchorage 3 to 5 miles from the mouth. Carter and Urbanna Creeks are used extensively as harbors by small craft.

(117) The channel from the mouth of Rappahannock River to Tappahannock is comparatively straight, but gradually decreases in width and leads between shoals that make out from both banks. The principal dangers are marked. Strangers can take a draft of 10 feet to Tappahannock by day with the aid of the chart, but navigation of the narrow, crooked channel farther up requires local knowledge. There are rocks in places on both sides of the channel for 4 miles below Fredericksburg, and the shores should be given a good berth. Strangers can safely carry a draft of 5 feet to Fredericksburg with the aid of the chart.

Currents

(118) The **currents** follow the general direction of the channel. The velocities throughout the river are usually weak, averaging less than 1 knot at the entrance to 1.4 knots at Tappahannock. Times of slack water and strength of current become later going upriver. These normal conditions are subject to change by winds and changes in drainage flow.

Ice

(119) During severe winters, **ice** closes the river nearly to Tappahannock, but in ordinary winters the channels are usually kept open by the river traffic. Ice sufficient to interfere with navigation of small craft will usually be encountered in January and February, particularly above Port Royal.

Freshets

(120) **Freshets** occur during the spring and fall, but are of short duration and ordinarily are not dangerous to shipping. The highest level on record was 33 feet above low water at Fredericksburg, but the usual height due to freshets is not more than 9 to 12 feet and only occasionally rises above the wharves. The freshet effect on the water level decreases rapidly below Fredericksburg and is ordinarily negligible 11 miles downriver.

Supplies and Repairs

(121) The principal places along Rappahannock River for supplies and small-vessel **repairs** are Broad Creek, Carter Creek, and Urbanna Creek.

(122) The entrance to Rappahannock River is between Stingray Point and **Windmill Point,** 45.7 miles above the Capes. This is the **Mile 0.0** for distances on the Rappahannock. The shores on both sides of the entrance are wooded; the two lights, off Stingray and Windmill Points, are the most prominent landmarks.

(123) **Rappahannock Spit** extends southeastward from Windmill Point for about 4.5 miles, and has depths of 4 to 18 feet. **Windmill Point Light** (37°35'49"N., 76°14'10"W.), 34 feet above the water, is shown from a platform with a red and white diamond-shaped daymark, in depths of 12 feet on the spit 2.3 miles from the point.

(124) Depths of 10 feet can be carried across Rappahannock Spit anywhere outside Windmill Point Light. About 0.4 mile outside the light, a buoyed lane that extends southwestward through the fishtraps is a short cut for lightdraft vessels approaching the river from northward.

(125) A 6-foot marked channel leads to a marina basin on the south side of **Fleets Island** west of Windmill Point. Gasoline, diesel fuel, berths, electricity, sewage pumpout, and a launching ramp are available.

(126) **Broad Creek**, Mile 0.7S, is used by oystermen, fishing boats, and yachts. A dredged entrance channel, marked by a light, buoys, and daybeacons, leads from Rappahannock River to natural depths of 7 to 5 feet

inside the creek. In 2011, the midchannel controlling depth in the creek was 8.5 feet. There are several boatyards and marinas, and a machine shop on the creek; berths, gasoline, diesel fuel, water, ice, a sewage pump-out station, and marine supplies are available. Hull and engine repairs can be made. Maximum haul–out capacities are: marine railway, 100 feet; lift, 50 tons.

(127) At Mile 5.0S, a dredged channel, marked by a light and a daybeacon, leads to a turning basin and wharf 0.5 mile eastward of **Mill Creek** entrance. In 2002, the reported controlling depth was 8.9 feet in the channel; thence in 1974, 9 feet was in the basin.

(128) **Locklies Creek**, Mile 6.0S, has depths of about 5 feet through a marked entrance with depths decreasing to about 2 feet inside. An overhead power cable near the head has a clearance of 34 feet. There are marinas on the north and south sides near the entrance. The largest marine railway on the south side of the creek can handle craft up to 45 feet for repairs. Some marine supplies, water, ice, gasoline, diesel fuel, wet and dry storage, berthing with electricity, launching ramp, and a pump-out station are available.

(129) A dredged channel westward of Parrott Island forms an inside passage between Mill Creek and Locklies Creek. In 2002, the channel had a reported controlling depth of 1.4 feet.

(130) An inactive fish factory and wharf with depths of 18 feet at the face are on **Cherry Point,** Mile 6.3N.

(131) A fixed highway bridge crosses the river at Mile 7.0; the channel span has a clearance of 110 feet. An overhead power cable at the bridge has a clearance of 122 feet.

(132) **Carter Creek**, Mile 8.3N, is the approach to the villages of **Weems** on the west side and **Irvington** on the east side. Traffic on the creek consists chiefly of recreational boats. Drafts using the creek seldom exceed 11 feet and are mostly 6 feet or less.

(133) In 2005, the controlling depth in Carter Creek was 15 feet at midchannel in the entrance channel, thence depths of 7.1 to 12.0 feet at midchannel in Eastern Branch to the wharves at Irvington. Depths of about 6 feet have been reported in **Carter Cove,** the western branch. The entrance is marked by lights and daybeacons.

(134) There are several oysterhouses and yacht facilities in Carter Creek. Most vessels go alongside the wharves with depths of about 8 feet, but the creek also is used as an anchorage. (See the small-craft facilities tabulation on chart 12237 for services and supplies available.)

(135) **Corrotoman River**, Mile 10.0N, has depths of 14 feet or more for 4 miles to the junction of Eastern and Western Branches. The river channel is obstructed by shoal spits and middle grounds, but the principal shoals as far as the fork, and for 0.5 mile above in Western Branch, are marked.

(136) **Whitehouse Creek**, on the west side of Corrotoman River 0.8 mile above the mouth, has depths of 7 feet to the landing at **Bertrand,** on the north side 0.5 mile from the entrance. **Town Creek,** on the west side of Corrotoman River 2 miles above the mouth, has depths of 2 to 4 feet. Gasoline is available near the head. **Taylor Creek,** on the east side of Corrotoman River 2.5 miles above the mouth, has depths of 2 to 5 feet in the entrance and 4 to 8 feet inside the creek.

(137) **Eastern Branch** of Corrotoman River has depths of 13 feet for 1.4 miles, thence 8 feet for 1.5 miles. **Western Branch** has depths of 12 feet or more for 2.5 miles, thence 5 feet for 2 miles.

Cable ferry

(138) A cable ferry crosses Western Branch from **Ottoman Wharf,** on the southwest side about 1.3 miles above the fork, to **Merry Point,** on the opposite side. The ferry carries passengers and vehicles. The ferry operates between the hours of 0700 and 1900, Monday through Saturday, and 0700 to dark during the winter months. When the ferry is underway, the unmarked cable is suspended about 3 feet above the water's surface, and is dropped to the bottom when not underway. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(139) **Whiting Creek**, Mile 10.5S, is entered from Rappahanock River by a dredged channel marked by buoys. In 2010, the controlling depth was 1.2 feet in the channel to the head of the project.

Chart 12237

(140) **Urbanna Creek**, Mile 13.8W, is used by many pleasure craft. The town of **Urbanna** is on the west bank, near the entrance.

(141) A dredged channel leads from Rappahannock River to a turning basin and wharves just below the bridge. In 2002, the controlling depths were 2.6 feet in the channel (7.6 feet at midchannel) and 7.9 to 8.1 feet in the basin. Above this point, depths of 6 feet or more for about 0.7 mile, and small craft can go another mile upstream. In 1981, shoaling to 4 feet was reported about 0.4 mile above the fixed highway bridge in about 37°37'34"N., 76°34'34"W. The marked entrance is protected by a riprap jetty on the north.

(142) The wharves at Urbanna have reported depths of 4 to 12 feet alongside. Marine supplies, gasoline, diesel fuels, ice, water and berths with electricity are available. Engine, hull and electronic repairs are available. The largest mobile lift is 40 tons.

(143) The fixed highway bridge over Urbanna Creek 0.7 mile above the entrance has a 40-foot channel span with a reported clearance of 20 feet. A "no wake" **speed limit** is in effect in Urbanna Creek.

(144) **Robinson Creek**, Mile 14.1W, has depths of 5 feet through the entrance to the head. **Urbanna Wharf,** on the south side of the entrance, is about 900 feet long with depths of 6 feet at the outer end. A yacht yard is at the wharf.

(145) **Lagrange Creek**, Mile 14.8W, has depths of 7 feet in the marked entrance and 4 feet for 1 mile to a boatyard on the southwest side. A 42-foot marine railway, a machine shop, gasoline, diesel fuel, water, ice, a pump-out station, berthing; some with electric and hull and engine repairs are available. The lift capacity is 40 tons. The wharf has depths of 4 feet at the outer end.

(146) **Greenvale Creek**, Mile 16.9E, is used mostly by local fishermen. A dredged channel, marked by a light and daybeacons, leads from Rappahannock River to a landing about 0.3 mile above of the creek. In 2010, a marina in the creek had a reported alongside depth of 5 feet. Gasoline, ice, water, electricity, pump-out station, wet and dry storage, supplies, berthing; some with hull, engine and electronic repairs are available; lift to 18 tons.

(147) **Parrotts Creek**, Mile 20.0W, has a dredged channel marked by lights and daybeacons from the entrance to the public landing at **Water View,** 0.5 mile above the mouth. In 1990-2002, the controlling depth was 2.6 feet (3.4 feet at midchannel). An overhead power cable across the creek just above the mouth has a clearance of 50 feet. Oyster wharves near the entrance have depths of 5 to 8 feet at their faces.

(148) **Deep Creek**, Mile 21.0E, has depths of 2 feet across the flats at the entrance and 3 to 5 feet in the several branches. The creek usually is bush-staked. The overhead power cables at **Boer** have a minimum clearance of 30 feet.

(149) **Mulberry Creek**, Mile 22.4N, in 1974, had reported depths of 4 feet in the dredged cut at the entrance. Above the dredged cut there are depths of about 4 feet for 1 mile upstream. A light marks the west side of the entrance, and a shell islet awash at high water is at the inner end of the channel cut. A daybeacon marks a submerged shell pile 0.3 mile southwestward of the light. The daybeacon also marks the entrance to a privately dredged channel passing immediately to the west of the shell pile. This channel had a depth of 3 feet in 1974. Gasoline and some supplies are obtainable at **Morattico,** on the northwest side of the entrance.

(150) **Lancaster Creek**, Mile 23.5N, has depths of 5 feet in the marked entrance, and thence from 4 to 2 feet for 4 miles to **Woodhouse Landing**. About 2 miles above the entrance, the creek is crossed by an overhead power cable with a clearance of 27 feet. A marina on the west side of the entrance has about 3 feet in its basin; some supplies are available and mechanical repairs can be made.

(151) **Morattico Creek** enters Rappahannock River just westward of Lancaster Creek. Oysterhouses are on both sides of the entrance. In 1980, the controlling depth was reported to be 6 feet through the entrance and alongside the wharves.

(152) At **Butylo,** Mile 24.2W, a jetty extends 0.4 mile into the river; depths of 4 feet are reported alongside. An oysterhouse is on the jetty.

(153) A small-boat harbor is at **Wildwood Beach,** Mile 28.3W. The entrance to the harbor is protected on the north side by a 300-foot-long jetty, and on the south side by a point of land extending to seaward about the same distance. A light is off the jetty. In 2010, the reported controlling depth was 5 feet in the entrance and 4 feet alongside the basin. Berths, gasoline, diesel fuel, electricity, water, ice, some marine supplies, wet and dry storage, and a 15-ton lift are available; hull, electronic, and engine repairs can be made.

(154) **Rappahannock River Light 19** (37°49.5'N., 76°44.0'W.), 23 feet above the water, is shown from a cylindrical base, with a square green daymark, in depths of 6 feet at Mile 28.5. **Bowlers Rock,** covered 7 feet and buoyed, is on the east side of the channel about 500 yards eastward of the light. A submerged wreck is on the southwest edge of the channel 100 yards north-northeastward of the light; and foul ground extends upriver along the southwest edge of the channel for 1.3 miles from the light.

(155) **Totuskey Creek**, Mile 30.8N, is entered by a marked dredged channel which leads to a turning basin below the Totuskey Bridge, 4 miles above the mouth. In 2001, the midchannel controlling depth in the entrance channel and in the creek channel to the bridge was 4.2 feet. The channel is narrow in places and difficult to follow, deeper water is available with local knowledge. A timber-and-bush dike on the northeast side, 2.5 miles above the entrance, is barely visible. An overhead power cable about 3.2 miles above the entrance has a clearance of 75 feet. **Totuskey Bridge** is a fixed concrete span with a clearance of 10 feet. A wharf on the southeast bank, just below the bridge, has depths of 10 feet at the face and is used by grain barges. Barges load pulpwood at a landing on the opposite shore, about 0.2 mile below the bridge.

(156) An overhead power cable over the Rappahannock River at Mile 32.1 has a clearance of 80 feet over the main channel and 50 feet elsewhere.

(157) **Piscataway Creek**, Mile 35.0W, has depths of 4 feet in the entrance with greater depths for 5 miles upstream. A highway bridge, 4 miles above the entrance, has a fixed span with a clearance of 7 feet. Overhead power cables between the entrance and the bridge have a minimum clearance of 16 feet.

(158) **Hoskins Creek** is at Mile 36.8W. A marked dredged channel extends from the entrance to a turning basin about 0.4 mile above the mouth, thence to the highway bridge about 0.6 mile above the mouth. In 2009, the controlling depth was 8.8 feet (10 feet at midchannel) to the mouth of the creek, thence 9.7 feet to the turning basin, thence 9.5 feet in the turning basin, thence 3.7 feet to the head of the project just below the highway bridge. A grain depot is near the bridge, and there is a public wharf about 0.3 mile below the bridge. The fixed highway bridge has a 34-foot channel span with a clearance of 8 feet; the nearby overhead power cable has a clearance of 43 feet. A small marina is near the first bend. A "no wake" **speed limit** is enforced.

(159) **Tappahannock** is at Mile 37.4W. The highway bridge over the river at Tappahannock has a fixed span with a clearance of 50 feet. A wharf just below the bridge is in ruins.

(160) A privately marked channel with a depth of about 4 feet leads to a small-boat basin at Tappahannock, 0.2 mile above the bridge. Water, ice, gasoline, a 6-ton lift and some supplies are available; repairs can be made.

(161) **Mount Landing Creek**, Mile 38.4W, has depths of 3 feet across the flats at the entrance and deeper water inside for 3.5 miles. Twin fixed highway bridges cross the creek near its entrance; minimum width is 34 feet and clearance is 9 feet. The overhead power cable just north of the bridges has a clearance of 18 feet. The creek is used by fishermen.

(162) **Cat Point Creek**, Mile 39.5E, has depths of about 4 feet across the bar at the entrance. In 2000, shoaling to bare was reported in the section of the creek beginning at a point about 1.5 miles above the mouth. Depths of about 3 feet can be carried to **Menokin Landing,** about 7 miles above the mouth, by using the cutoff in 37°59'16"N., 76°50'19"W., about 1.7 miles above the mouth; local knowledge is advised. A fixed highway bridge over the entrance has a width of 41 feet and a clearance of 10 feet. An overhead power cable 200 yards above the bridge has a clearance of 21 feet. The highway bridge 6 miles above the entrance has a 31-foot fixed span with a clearance of 4 feet.

(163) **Occupacia Creek**, Mile 44.2W, has depths of 3 feet across the bar at the entrance and 4 feet for 6 miles up the middle branch; an overhead cable 2.5 miles above the entrance has a clearance of 35 feet, and the overhead cable 6 miles above the entrance has a clearance of about 30 feet. **Bridge Creek,** the eastern branch, has depths of 2 feet to a fixed bridge 1 mile above the entrance.

(164) **Layton** is at Mile 50.5W. In 1980, the lower pier was in poor condition and the upper pier was in ruins. Pulpwood is shipped by barge from **Leedstown,** Mile 52.4N.

(165) **Port Royal** is at Mile 68.5S. The highway bridge from Port Royal to **Port Conway** has a fixed span with a clearance of 50 feet.

(166) **Newton Rock**, Mile 91.2S, is 50 feet from shore and almost awash at high tide; the best water is 100 feet off the rock.

(167) A fixed highway bridge with a clearance of 37 feet is at Mile 92.9N.

(168) **Fredericksburg**, Mile 93.5W, the historic colonial city, has little trade by water, but can accommodate motor vessels and barges drawing up to 10 feet. Practical navigation terminates at the Old City Dock at the southern end of the city, but small boats can go about 1 mile farther upriver. Anchorage space is limited. The fixed highway bridge about 0.5 mile below the dock and the fixed railroad bridge just above the dock have clearances of 37 feet. The fixed highway bridge, 700 yards farther up, has a clearance of 50 feet.

Chart 12235

(169) **Fleets Bay**, just northward of Rappahannock River entrance, is the approach to Little Bay and Antipoison, Tabbs, Dymer, and Indian Creeks.

(170) Depths of 8 feet can be taken through **Little Bay**, on the south side of Fleets Bay, westward in a narrow channel into **Antipoison Creek** and upstream for over 1 mile. The bay and creek are used by boats with drafts up to 6 feet. Two herring processing plants on the south side of Antipoison Creek 0.6 mile above the entrance have wharves with depths of 6 feet reported at the faces; another plant directly across the creek has a wharf with depths of 6 feet at the face.

(171) **Tabbs Creek**, on the west side of Fleets Bay 1.5 miles northward of Antipoison Creek, has depths of 2 feet with local knowledge over the bar at the entrance, thence reported depths of 3.5 or more feet for about 1 mile.

(172) **Dymer Creek**, on the west side of Fleets Bay about 2 miles northward of Antipoison Creek, had a reported depth of 4.2 feet in 2005 for 2 miles. The approach through Fleets Bay is well marked. An inactive fish factory is on the south side of the creek 1 mile above the entrance; the wharf is in ruins. The boatyard in **Poplar Neck Creek,** just below the fish factory, makes hull and minor engine repairs; marine railway, 65 feet.

(173) In 2003, **Indian Creek**, at the northwest corner of Fleets Bay about 3 miles northward of Antipoison Creek, had reported depths of 12.4 feet in the approach and 9.2 feet for about 2 miles above the entrance, and then shoals to 5 feet 0.8 mile farther up. Traffic on the creek consists chiefly of pulpwood, shellfish, shells, and grain. Drafts of vessels using the creek seldom exceed 13 feet and are mostly 6 feet or less. The approach through Fleets Bay and the channel in the creek are well marked.

(174) A country club pier is about 1 mile above the mouth of Indian Creek, on the northeast side in a cove. The pier has depths of about 6 feet at the face. **Kilmarnock Wharf,** on the west side 2 miles above the entrance, is at the foot of a paved road that leads 1.5 miles inland to the town of **Kilmarnock.** A marina at the wharf has gasoline, diesel fuel, pumpout, electricity, water, ice, and nautical supplies. In 2005, an alongside depth of 10 feet was reported. General engine repairs can be made. Depths of 6 feet can be carried for 0.5 mile up the western branch above Kilmarnock Wharf to a marine railway that can handle boats up to 40 feet for repairs.

(175) **Dividing Creek** is 8.7 miles north-northwestward of Windmill Point Light. The creek has reported depths of 13 feet in the approach and 6.5 feet for 1.6 miles above the entrance, then shoaling to about 3 feet 0.7 mile farther up. The creek is used by boats with drafts of 5 feet or less. The approach between the shoals off the entrance is well marked by lights and daybeacons.

Chart 12225

(176) In addition to the danger zone of a naval firing range that extends from north of Wolf Trap Light to south of Tangier Sound Light, previously described, several danger areas are in Chesapeake Bay between Windmill Point Light and Smith Point Light.

(177) **San Marcos Wreck**, 10.5 miles northeast of Windmill Point Light, is covered by about 20 feet of water, but the depth over it is subject to change, due to the shifting steel.

(178) The **danger zone** of a naval missile target area is centered about 3.5 miles west-southwest of **Tangier Island.** (See **334.210**, chapter 2, for limits and regulations.) Sunken ships and other obstructions are within the area.

Chart 12235

(179) **Great Wicomico River**, on the west side of Chesapeake Bay 13 miles northward of Windmill Point Light, is entered between **Dameron Marsh** and **Bull Neck,** 1.7 miles to the northward. The principal marks for the entrance are Great Wicomico River Light and the buildings at Fleeton, on Bull Neck.

(180) **Great Wicomico River Light** (37°48'12"N., 76°15'59"W.), 42 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark, in depths of 9 feet 0.6 mile southeast of Bull Neck. The light is 4.5 miles due west of a point on the main channel 56 miles above the Capes.

(181) Great Wicomico River has depths of 17 feet or more for 5.5 miles above the entrance, and thence 9 feet or more for 3 miles. The river is navigable for small craft for another 2 miles. Vessels seeking shelter usually anchor in depths of 15 to 20 feet off and in the entrance to Cockrell Creek or in the large bay just W of Sandy Point. Fishtraps usually will be found on the shoals at the entrance; the approach can be made on a due west course between the buoys marking the trap areas.

(182) The channel in Great Wicomico River is marked by lights for 4 miles from the entrance.

Ice

(183) Ice does not close the river to navigation except in severe winters, and then only for brief periods; Cockrell Creek is considered a secure harbor from ice.

(184) **Cockrell Creek**, on the northeast side of Great Wicomico River 1 mile above the mouth, is entered between **Fleeton (Fleet) Point** on the south and Cockrell Point on the north; a light marks the entrance. There are depths of 15 feet for 1.5 miles above the entrance, thence gradual shoaling to 6 feet 1 mile farther up. Traffic consists chiefly of fish, shellfish, construction material, and petroleum products. Several fish factories operate along its shores. Drafts of vessels are mostly 12 feet and under, but drafts up to 14 feet use the creek. There are depths of 8 to 15 feet at the faces of the wharves.

(185) A menhaden fleet is based on each side of Cockrell Creek, about 1 mile above Fleeton Point.

(186) **Reedville** is on the east side of Cockrell Creek 1.5 miles above the entrance. A petroleum pier and a barge wharf with depths of about 8 feet alongside are on the east side of the peninsula at Reedville. Gasoline, diesel fuel, and some marine supplies are available.

(187) Reedville is a **customs port of entry.**

(188) The boatyards along Cockrell Creek can handle vessels up to 70 feet for hull, engine, and electronic repairs.

(189) **Mill Creek**, on the southwest side of the river 1.5 miles above the entrance, has reported depths of 7 feet or more through a crooked channel across the flats to the entrance and 5 feet to about 0.4 mile above the entrance. An abandoned grain wharf is 1.5 miles above the mouth.

(190) **Towles Creek** is entered through a channel privately marked by daybeacons about 1.7 miles west of Great Wicomico River Light. In 2009, the reported controlling depth was 8.3 feet through the entrance, thence 6.5 feet in the creek. A marina on the south shore has gasoline, diesel fuel, and limited supplies.

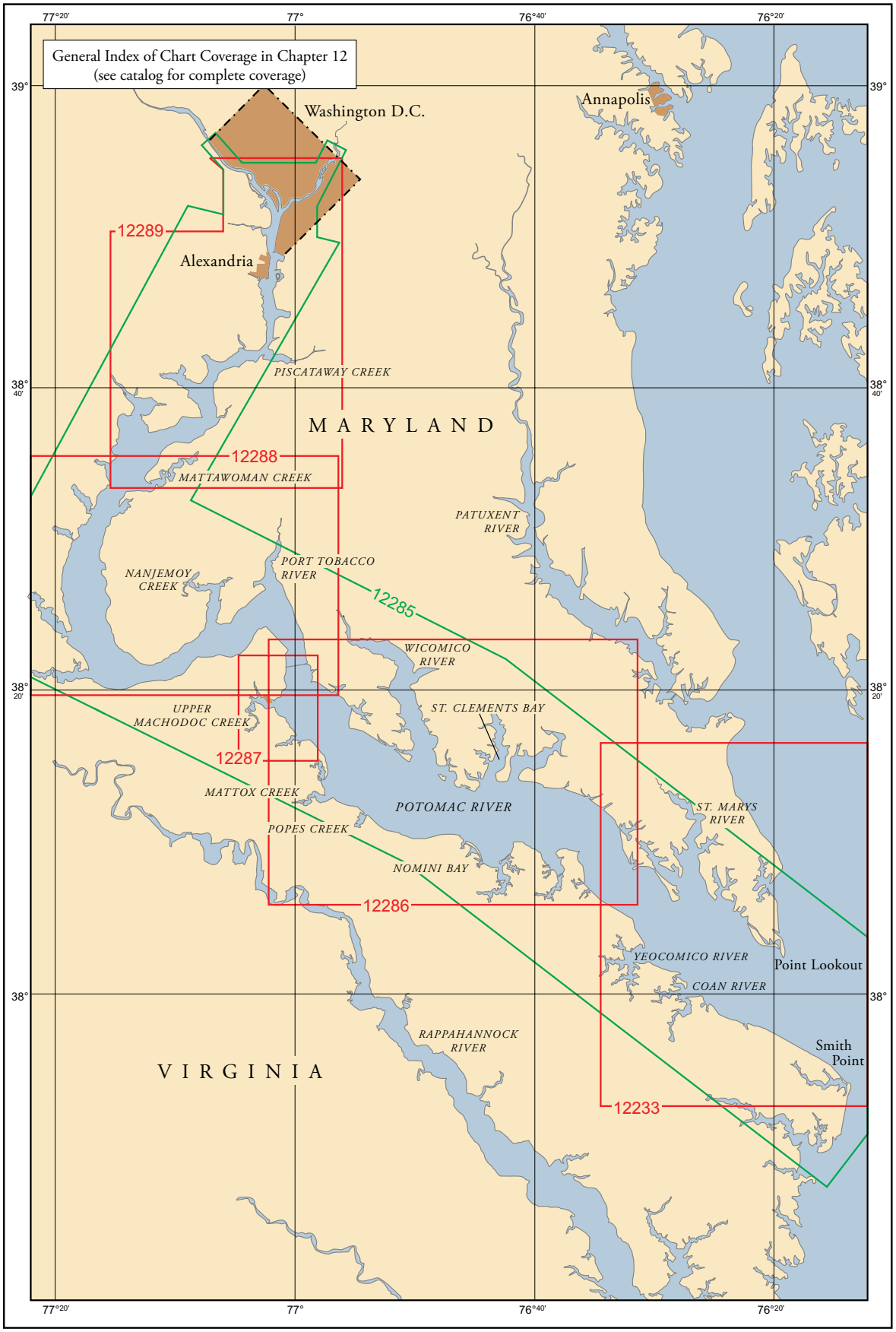
(191) **Cranes Creek** is on the west side of Great Wicomico River 1.5 miles above the mouth. The entrance channel, marked by daybeacons, in 2006, had a controlling depth of 6 feet. Greater depths are inside. Several small privately owned wharves along the banks of the creek are used by boats drawing up to 3 feet. Overhead power and telephone cables with a least reported clearance of 25 feet cross the creek near its head.

(192) **Mila**, on the west side of Great Wicomico River 3.5 miles above the mouth, has a landing with a depth of 5 feet at the outer end.

(193) The highway bridge over Great Wicomico River 6 miles above the mouth a fixed span with a clearance of 55 feet. The overhead power cable about 50 yards above the bridge has a clearance of 54 at midchannel and 40 feet elsewhere. A marina on the east side of **Glebe Point** at the north end of the bridge can provide gasoline, diesel fuel, and supplies. Hull and engine repairs can be made; a marine railway can handle boats up to 65 feet. Gasoline is also obtainable at a wharf on Ferry Point, 0.7 mile east of the bridge.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12221	Fishermans Island, Chesapeake Bay	37°06'N/75°59'W	3.4	3.2	0.1
12221	Wolf Trap Light, Chesapeake Bay	37°23'N/76°11'W	1.8	1.7	0.1
12221	Tue Marshes Light, York River Entrance	37°14'N/76°23'W	2.5	2.3	0.1
12221	Old Point Comfort	37°00'N/76°19'W	2.8	2.6	0.1
12222	Craney Island (lighthouse), Elizabeth River	36°54'N/76°20'W	2.9	2.7	0.1
12222	Lynnhaven Inlet, Virginia Pilots Dock	36°54'N/76°05'W	2.6	2.4	0.1
12222	Messick Point, Back River	37°07'N/76°19'W	2.6	2.5	0.2
12222	Hampton Roads, Sewells Point	36°57'N/76°20'W	2.8	2.5	0.1
12222	Cape Henry	36°56'N/76°00'W	3.5	3.2	0.1
12225	Watts Island, Chesapeake Bay	37°48'N/75°54'W	1.8	1.7	0.1
12235	Great Wicomico River Light, Chesapeake Bay	37°48'N/76°16'W	1.2	1.1	N/A
12235	Dixie, Cobb Creek	37°31'N/76°25'W	1.5	1.4	0.1
12238	Mobjack, East River	37°22'N/76°21'W	2.7	2.5	0.1
12243	West Point, York River	37°32'N/76°48'W	3.1	2.9	0.1
12244	Wakema, Mattaponi River	37°39'N/76°54'W	3.9	3.6	0.2
12244	Northbury, Pamunkey River	37°38'N/77°07'W	3.8	3.5	0.2
12244	Lester Manor, Pamunkey River	37°35'N/76°59'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 November 2011


General Index of Chart Coverage in Chapter 12
(see catalog for complete coverage)
77°20'
77°
76°40'
76°20'
39°
38° 40'
38° 20'
38°
Washington D.C.
Annapolis
Alexandria
12289
PISCATAWAY CREEK
MARYLAND
12288
MATTAWOMAN CREEK
PATUXENT RIVER
NANJEMOY CREEK
PORT TOBACCO RIVER
12285
WICOMICO RIVER
UPPER MACHODOC CREEK
ST. CLEMENTS BAY
12287
MATTOX CREEK
POTOMAC RIVER
ST. MARYS RIVER
POPES CREEK
NOMINI BAY
12286
YEOCOMICO RIVER
Point Lookout
COAN RIVER
RAPPAHANNOCK RIVER
Smith Point
VIRGINIA
12233

Chesapeake Bay, Potomac River

(1) This chapter describes the Potomac River and the numerous tributaries that empty into it; included are Coan, St. Marys, Yeocomico, Wicomico, and Anacostia Rivers. Also described are the ports of Washington, DC, and Alexandria, and several smaller ports and landings on these waterways.

COLREGS Demarcation Lines

(2) The lines established for Chesapeake Bay are described in **80.510,** chapter 2.

Charts 12233, 12286, 12288, 12289, 12285

(3) **Potomac River** flows into the west side of Chesapeake Bay 68.4 miles above the Virginia Capes. The west bank of the river, generally, is the boundary between Virginia on the west and Maryland on the east, and at the head of tidewater on the east bank is the city of Washington, D. C., the Nation's Capital.

(4) Hains Point at the junction of Anacostia River and the Washington and Georgetown Channels is 94.6 miles above the mouth of the Potomac. The head of tidewater navigation is at Chain Bridge, Washington, 101 miles above the mouth. The widest point of the river, 6.4 miles, is 11 miles above its mouth (see chart 12233).

(5) **Mileages** on Potomac River in this chapter, such as Mile 13E, Mile 41W, and Mile 51N, are the nautical miles above the midchannel entrance point which is 4.8 miles northwest of Smith Point on a line between Smith Point and Point Lookout; that point is 68.4 miles above the Capes. The letters N, S, E, or W following the mileage numbers denote by compass points the side of the river where each feature is located.

(6) It is to be understood that the mileages given are approximations. The intended degree of accuracy is only supposed to be enough to put the user of the chart in the general vicinity of the cited object, for the purpose of locating the object.

(7) Traffic on the river consists chiefly of petroleum products; sand, gravel, and crushed rock; and some newsprint and fertilizers. Drafts of vessels navigating the river usually do not exceed 20 feet.

Channels

(8) The Federal project depth is 24 feet for Potomac River from the mouth to Hains Point. Channel depths of 38 feet or more are available to Ragged Point, 20 miles above the mouth; thence the controlling depth through the dredged cuts is about 18 feet to Hains Point. The channels are maintained at or near project depths. (See Notice to Mariners and latest editions of the charts for controlling depths.)

Anchorages

(9) Vessels bound up or down the river anchor anywhere near the channel where the bottom is soft; vessels sometimes anchor in Cornfield Harbor or St. Marys River. (See chart 12233.) Above Alexandria, vessels usually go to the wharves; there is little or no anchorage for anything but small craft. Near the mouth of the river, small craft can find secure anchorage in most of the tributaries; Smith Creek (see chart 12233) is said to have best protection from all winds.

(10) **Fishtrap areas** extend upriver from the mouth to St. Clements Island. Limits of the areas are shown on charts 12233 and 12286. Mariners are warned that numerous uncharted duck blinds and fishing structures, some submerged, may exist in the fishtrap areas; such structures are not charted unless known to be permanent.

(11) Numerous markers, established and maintained by the Potomac River Fisheries Commission, mark the Maryland and Virginia jurisdictional fishing boundaries on both sides of the Potomac River from Chesapeake Bay to Mattawoman Creek at Mile 71.5E in Maryland, and Occoquan Bay at Mile 73.8W in Virginia, and at the entrances to many of the bays and rivers.

(12) The markers are pile structures with white square daymarks with orange borders and identifying black letters "PRM", "PRV", and numbers.

Danger zones and restricted area

(13) The Potomac River and its tributaries are used extensively by the military establishments for testing operations and gunnery practice. (Limits and regulations for these areas are given in **334.230, 334.240, and 334.250,** chapter 2.)

Tides

(14) Above Washington, the river is tidal as far as Chain Bridge. The tides are influenced by the force and direction of the wind and by freshet conditions, and may at times vary considerably. Daily predictions for Washington, DC are given in the Tide Tables.

Currents

(15) The current in Chesapeake Bay off the mouth of Potomac River can be hazardous to smaller vessels and

pleasure boats at ebb tide, and when wind and current are opposed, and with northwest winds. These conditions are more pronounced off Smith Point. The currents in the Potomac River follow the general direction of the channel. The velocities vary throughout the river and are influenced by wind and freshets. There may be little or no flood current during freshets.

(16) The current velocity is weak in the lower part of the river between the entrance and Piney Point, averaging less than 1.0 knot. (See Tidal Current Tables for predictions.)

Ice

(17) During severe winters the tributaries of the Potomac are closed by ice and the river is frozen over to Cedar Point; the upper part is then closed to navigation. During ordinary winters the powered vessels plying the river keep the channel open.

(18) When threatened by icing conditions, certain lighted buoys may be replaced by lighted ice buoys with reduced candlepower or by unlighted buoys, and certain unlighted buoys may be discontinued. (See Light List.)

Freshets

(19) **Freshets** occur at irregular intervals, but usually do not interfere with navigation below Alexandria unless accompanied by floating ice.

Pilotage, Potomac River

(20) Pilotage is compulsory on the Potomac River for foreign vessels and U.S. vessels under register in the foreign trade. Pilotage is optional for U.S. vessels in the coastwise trade who have on board a pilot licensed by the Federal Government for these waters.

(21) The Chesapeake and Interstate Pilots Association offers pilot services to U.S. vessels, engaged in the coastwise trade, and public vessels to Piney Point. Arrangements for pilots may be made through ships' agents or the pilot office in Norfolk (telephone, 757-855-2733). Pilots will meet vessels entering from sea at Cape Henry (discussed in chapter 9), and will meet a vessel at its port if it is on the Chesapeake Bay and its tributaries or Delaware Bay and River and provide all pilot services directly to the Potomac River. Pilots may meet vessels off the Patuxent River or off the mouth of the Potomac River with sufficient coordination. Contact the pilot office for information.

(22) The Virginia Pilots Association offers pilotage to any vessel bound for a port in Virginia or Washington, DC. The Association of Maryland Pilots offers pilotage to any vessel bound for a port in Maryland or Washington, DC. (See Pilotage, chapters 3 and 9.)

Charts 12233, 12285

(23) **Potomac River** is entered between Smith Point and Point Lookout; the width of the entrance, normal to the channel, is about 5 miles.

(24) The **fishtrap** areas in the lower river are shown on the charts.

Danger zones

(25) **Danger zones** for military testing operations extend from the mouth of the river to about 4 miles above the Potomac River Bridge, Mile 43.4. (Limits and regulations are given in **334.230,** chapter 2.) When military firing operations are in progress in the danger zones, range patrol boats with white hulls and international orange superstructures, and shoreline spotters, are stationed near the firing areas. The range patrol boats display a square red flag during daylight hours and an all-round red light from the mast at night. Surface traffic on the range is controlled by the range patrol boats and the shoreline spotters on VHF-FM channel 16.

(26) **Smith Point**, the southerly entrance point, is low and inconspicuous. A shoal area that extends eastward from the point has depths as little as 8 feet 2 miles from shore; a buoy marks the northeast edge of the shoal.

(27) **Smith Point Light** (37°52'47"N., 76°11'01"W.), 52 feet above the water, is shown from a white square brick tower and octagonal dwelling on a brown cylindrical pier about 2.5 miles east-southeast of the point. A lighted bell buoy 1.5 miles from the light marks the separation lane of the **Traffic Separation Scheme (Smith Point)** for the bay ship channel. (See chart 12225.) The Scheme discussed in chapter 9.

(28) **Little Wicomico River**, used by local fishermen and pleasure craft, empties into the Potomac River and Chesapeake Bay at Smith Point. A marked dredged channel leads from the Potomac River and Chesapeake Bay junction through a jettied entrance to a marked natural channel in the river. In 2010, the controlling depth was 6.6 feet in the entrance channel. A depth of about 6 feet can be carried for 4 miles upriver with local knowledge. The approach to the river is marked by a light. A daybeacon and a light are on the ends of the north and south jetties, respectively, and daybeacons mark the upper reaches of the river to a point about 3 miles above the entrance. The entrance is subject to shoaling due to the strong current between the jetties; mariners are advised to exercise caution.

(29) **Slough Creek**, marked by daybeacons, empties into the south side of Little Wicomico River about 0.6 mile above the entrance. A small-craft facility on the east side of the creek can provide gasoline, diesel fuel, water, ice, berths with electricity, a pump-out station, a launching ramp, wet and dry storage, and marine supplies. The reported approach depth was 4.5 feet in 2010. Hull, engine, and electronic repairs can be made; lift to 12 tons.

Cable ferry

(30) A cable ferry crosses Little Wicomico River at **Sunnybank,** 1.5 miles above the entrance. The ferry carries passengers and vehicles. The ferry operates between the hours of 0700 and 1900, Monday through Saturday, and 0700 to dark during the winter months. When the ferry is underway, the unmarked cable is suspended about 3 feet above the water surface, and is dropped to the bottom when not underway. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

Small-craft facility

(31) A small-craft facility on the north side of the river about 3.6 miles above the entrance has berths with electricity. Gasoline, diesel fuel, water, ice, some marine supplies, a pump-out station, a launching ramp, and wet and dry storage are available. In 2010, 6 feet was reported in the approach. A marine railway at the facility can handle craft up to 80 feet for hull, electronic, and engine repairs; lift to 25 tons.

(32) **Point Lookout**, the northerly entrance point of Potomac River, is low, but well marked by a 195-foot lighted communications tower, and several buildings. The shoal that extends about 1 mile southward from the point is marked by **Point Lookout Light** (38°01'30"N., 76°19'25"W.), 39 feet above the water, shown from a skeleton tower with a black and white diamond-shaped daymark on a pile structure.

(33) **Cornfield Harbor**, just inside Point Lookout, is sheltered from northerly and northeasterly winds; vessels bound up and down the bay frequently use it as an anchorage for the night. The shoaling is gradual, except off **Cornfield Point** and at the south end of the shoal that extends southward from Point Lookout; at these places the hard sand bottom drops off abruptly. An 18-foot spot, and rocks covered 16 and 17 feet, are about 0.7 mile westward from Point Lookout, and a 10-foot spot lies between them and the Point Lookout shore.

(34) **Lake Conoy** is 0.8 mile north-northwest of Point Lookout. The lake is entered from Cornfield Harbor through a private channel marked by a light and daybeacons; in 1976, the reported controlling depths were 8 feet in the entrance and 6 feet in the basin and alongside the piers. The east side of the lake is the site of **Point Lookout State Park.** The State boating facility on the east shore of the lake has gasoline, water, ice, limited marine supplies, and a sewage pump-out station. No overnight berthing is permitted; anchorage in the basin is allowed in an emergency.

(35) **Coan River** (38°00.0'N., 76°27.0'W.), Mile 7.8S, has depths of 13 to 7 feet for 4.5 miles to within 0.5 mile of the head. The river is used mostly by local oyster and fish boats. A 500-yard lane in the approach is kept clear of fishtraps; the initial course through the lane is **230**°. The entrance to Coan River is marked by buoys and lights, and is easy to navigate; the channel inside is marked at the critical points by daybeacons and bush stakes. A warning daybeacon at about 37°59'07"N., 76°27'58"W., marked a shoal area reported in 1984 that reduced the channel width to about 30 feet. In 1979, shoaling to an unknown extent was reported in the channel about 200 yards eastward of Daybeacon 10 and about 200 yards eastward of the small point about midway between Daybeacons 14 and 16.

(36) **Kingscote Creek**, on the north side of Coan River 0.6 mile above the mouth, has depths of 8 feet for most of its 1-mile length. A shoal extends halfway across the entrance from the point on the west side. Gasoline, diesel fuel, water, ice, berths, pump-out station, launching ramp, wet and dry storage, and marine supplies are available at the small-craft facilities on the east side of the creek at **Lewisetta**. In 2010, 8 feet was reported alongside. Hull, engine, and electronic repairs can be made; lift to 25 tons.

(37) **The Glebe,** on the west side of Coan River 0.7 mile above the mouth, has depths of 9 to 13 feet to the forks 1.5 miles above the entrance. The channel in The Glebe is clear except for a shoal that extends well off from the point on the south side 0.6 mile above the entrance.

(38) **Stevens Point** is on the west side of Coan River 1 mile above the mouth. The boatyard on the south side makes hull, engine, and electronic repairs; lift capacity, 25 tons. Gasoline, diesel fuel, ice, water, berthing with electricity, a pumpout station, some supplies, a launching ramp, and wet and dry storage are available. In 2010, 10 feet was reported alongside.

(39) The grain wharf at **Bundick,** on the west side of Coan River 3.4 miles above the mouth, has depths of 9 feet at the outer end. **Coan** wharf, directly across the river from Bundick, is in ruins. The overhead power cable from Coan to Bundick has a clearance of 60 feet.

(40) **Smith Creek**, Mile 8.5N, is used by many small fishing and pleasure boats, and has the best protection along this part of the river from all winds. A depth of about 8 feet is available over the bar to the junction of the two main branches, 1.5 miles above the entrance light. The entrance is well marked. The lane through the fishtraps can be navigated on a course of **355°.**

(41) **Wynne**, on the east side of the entrance to Smith Creek, has fish wharves with depths of 5 to 10 feet at their outer ends. Small-craft facilities on the east side of the creek, just above the entrance, can provide gasoline, diesel fuel, water, ice, berths, and marine supplies. Hull and engine repairs can be made. Largest haul-out capacities; marine railway, 200 feet; lift, 35 tons.

(42) **St. Marys River**, Mile 9.7N, is 2 miles wide at the entrance and about 600 yards wide at St. Marys City, 5.5 miles up. The channel has depths of 20 feet or more to St. Marys City, then shoals gradually to 12 feet at **Martin Point** and to 8 feet at **Tippity Wichity Island,** 8 miles above the mouth. St. Marys River is sometimes used as an anchorage by the deeper draft vessels seeking shelter from heavy gales, but small boats prefer Smith Creek. The river has very little traffic other than local fishing craft. The course through the fishtraps off the entrance is **345°**.

(43) **St. George Island**, on the west side of the entrance to St. Marys River, is long, low, and sparsely wooded. The island is thickly settled, mostly by oystermen and fishermen, and is used to some extent as a summer resort. **St. George Bar** extends 1.3 miles southeastward from the island; a lighted buoy is about 1 mile southeastward of the outer end of the bar.

(44) **Island Creek**, on the southeast end of St. George Island, is entered by a marked dredged channel which leads to fishing piers and a turning basin inside. In 2010, the channel had a controlling depth of 4.3 feet with 5 feet in the basin.

(45) **St. George Creek**, which joins St. Marys River along the northeast side of St. George Island, has a narrow, crooked channel with depths of about 9 feet for 3.5 miles; the channel is marked for about 2.8 miles. In 1970, shoaling was reported in the creek, about 0.2 mile northwest of Light 7; extent of shoaling not known. The creek is used extensively by oystering and fishing boats, and by pleasure craft.

(46) A marked channel enters St. George Creek at the north end of St. George Island. The fixed bridge over the channel has a width of 35 feet and a clearance of 17 feet. Overhead power cables on both sides of the bridge have a clearance of 29 feet. In 2007, the controlling depth was 3.3 feet.

(47) The town of **Piney Point,** on the west side of St. George Creek 2.5 miles above the mouth, has several private wharves with depths of 5 to 8 feet.

(48) At **Morgan Point,** on the west side of St. George Creek 3.5 miles above the mouth, is a boatyard where hull repairs can be made; marine railway, 40 feet. Gasoline, water, and berths are available.

(49) **Carthagena Creek** enters the west side of St. Marys River about 3 miles above the mouth. The creek, marked by daybeacons and a light, is used chiefly by pleasure craft. A marina at **Dennis Point,** on the east shore of the creek about 1.1 miles above the mouth can provide berthing with electricity, gasoline, diesel fuel, ice, water, a pump-out station, wet and dry storage, and marine supplies. In 2010, the reported alongside depth was 6 feet. Hull, electronic, and engine repairs can be made; lift capacity, 75 tons.

(50) **St. Inigoes Creek** enters the east side of St. Marys River about 3.5 miles above the mouth. Depths of 11 feet can be carried to the junction of St. Inigoes Creek and **Church Cove,** 1.3 miles above the mouth. The creek is unmarked.

(51) **Molls Cove** is on the east side of the creek, 0.6 mile above the mouth. **St. Inigoes Coast Guard Station** is on the west side of its entrance.

(52) **St. Marys City**, at **Church Point**, on the east side of St. Marys River 5.5 miles above the mouth, was the original capital of Maryland. Few traces of the original town remain, but the statehouse was reconstructed in 1934 from the ruins of several other buildings nearby. A landing on the south side of the point has a depth of about 9 feet at the outer end.

(53) **Yeocomico River**, Mile 10.2S, has depths of 19 to 12 feet to the forks 1.4 miles above the entrance. Lights mark the channel to the forks and bush stakes mark the edges of the tributary channels. The initial course through the fish stakes off the entrance is **244°**.

(54) There are small-craft facilities on the north fork of Yeocomico River, and on the south side of **White Point Creek**, the westerly arm of **Shannon Branch**. Gasoline, diesel fuel, water, ice, berthing with electricity, some marine supplies, and a pump-out station are available. Hull, engine, and electronic repairs can be made. In 2010, a depth of 8 feet in the approach and alongside was reported. A 65-foot marine railway and lift to 50 tons are available in White Point Creek.

(55) **West Yeocomico River**, the west fork, has depths of 13 to 7 feet to **Kinsale**, on the southwest side 1.7 miles above the entrance. The fixed highway bridge at Kinsale has a width of 29 feet and a clearance of 8 feet. The bulkhead wharf has depths of 10 feet alongside; the grain elevators on the wharf are prominent. Small-craft facilities are on the north side of the river and at Kinsale. Gasoline, diesel fuel, berthing with electricity, pump-out, water, ice, marine supplies, wet storage, and a launching ramp are available.

(56) **South Yeocomico Rive**r, the south fork, has depths of 13 to 7 feet to **Lodge,** on the west side of **Lodge Creek** 2 miles above the entrance of the south branch. An overhead power cable with a clearance of 50 feet crosses Lodge Creek about 2.4 miles above the entrance. The fish wharf at **Mundy Point,** on the west side of the entrance, has depths of 6 feet at the wharf. Several small landings on the south side of the point have depths of 9 feet at their outer ends.

(57) **Harryhogan Poin**t is on the west side of South Yeocomico River 1 mile south of the entrance. The marine railways at the settlement can handle vessels up to 80 feet. The north landing at the cannery has depths of 9 feet alongside, and the south landing has depths of 5 feet. The lumber-mill landing 0.2 mile southwestward has depths of 7 feet alongside.

Small-craft facilities

(58) Small-craft facilities are on the south side of Harryhogan Point and on the east side of Lodge Creek. Gasoline, diesel fuel, berths, electricity, water, ice, pump-out station, storage, launching ramp, and marine supplies are available. Hull and engine repairs can be made. The largest marine railway in the area can handle craft up to 80 feet; a 50-ton lift is available.

(59) **Piney Point** (38°08.1'N., 76°31.8'W.) is at Mile 15.9N. An abandoned lighthouse tower and a former Coast Guard station are on the point. The former Coast Guard wharf and the small private landings east of Piney Point have depths of about 5 feet at their outer ends. Gasoline and some supplies are available at a dock about 1 mile northeast of the point.

(60) A prominent T-head pier of an oil company extends 1,000 feet southwestward from Piney Point. The pier,

marked by private lights, has depths of about 35 feet along its 684-foot outer face. The pier is owned and operated by L. P. Steuart Co.

(61) **Immigration, quarantine**, and **customs** officials come from Baltimore upon notification by the maritime exchange that tankers are due at Piney Point; vessels are boarded at the pier.

Charts 12286, 12285

(62) Limits of the **fishtrap** areas that extend upriver as far as St. Clements Island are shown on the charts.

Danger zones

(63) **Danger zones** for military testing operations extend upriver to about 4 miles above the Harry W. Nice (Potomac River Bridge) Bridge (U.S. Route 301), Mile 43.4. (See **334.230,** chapter 2, for limits and regulations.)

(64) **Bonum Creek** (38°05.7'N., 76°34.1'W.), Mile 16.0S, is entered from the Potomac River by a dredged channel which leads through jetties to an anchorage basin 0.4 mile inside. In 2011, the controlling depth was 2 feet in the channel with 4.4 to 5.1 feet in the basin. A light and daybeacons mark the channel to the basin. The creek is used chiefly by fishing craft.

(65) **Herring Creek**, Mile 18.7E, is entered by a marked dredged channel and is protected on both sides of the entrance by jetties. In 1991, the controlling depth in the entrance channel was 4.5 feet; depths inside are 9 to 1 feet. Lights mark the outer ends of the jetties. A marina, on the south side of the entrance, has gasoline, diesel fuel, berths, electricity, water, ice, launching ramp, storage, and some marine supplies. Hull and engine repairs can be made with a 30-ton lift. A fish pier with 6 feet at the outer end is just east of the marina fuel pier. Another marina is on the south side of the creek 1.2 miles above the entrance; depths of 5 feet are reported alongside the piers. Gasoline, berths, electricity, water, ice, pump-out station, storage, launching ramp, and limited supplies are available. Hull, engine, and electronic repairs can be made with a 25-ton lift.

(66) A shoal extends 0.5 mile offshore from **Ragged Point,** at Mile 19.1S. A light is near the outer edge of the shoal. A marina, south of Ragged Point, can provide gasoline, diesel fuel, berths with electricity, water, ice, a pumpout station, a launching ramp, dry and wet storage, and limited marine supplies. In 2009, 7 feet alongside was reported. Hull, engine, and electronic repairs are available; lift capacity, 30 tons.

(67) **Lower Machodoc Creek**, Mile 21.7S, has depths of 15 to 11 feet for 2 miles, thence the depths decrease to 4 feet at a point 4 miles above the entrance. The critical points are marked as far as the narrows 2.2 miles from the entrance; the shoals are usually bush-staked.

(68) **Branson Cove**, on the east side of Lower Machodoc Creek 1 mile above the entrance, is entered by a marked dredged channel which leads to a boat basin inside. In 2011, the controlling depth was 6 feet to the basin, thence depths ranging from 2 feet at the edge to 6 feet in the middle were available in the basin. **Coles Point**, the village along the north shore of the cove, has piers with depths of about 6 feet at the outer ends. A large oyster-packing plant is on the north side of the entrance to the cove. Small-craft facilities in the cove can provide gasoline, diesel fuel, water, ice, berths, and marine supplies. Hull and engine repairs can be made.

(69) **Nomini Bay**, Mile 25S, has depths of 20 to 15 feet in the middle, and is the approach to Nomini Creek and Currioman Bay. The shoaling is abrupt on the east side of the bay and gradual on the west side.

(70) **Nomini Creek** is entered through a dredged channel that extends about 1.2 miles above the entrance to Hickory Point. The channel is well marked by lights and daybeacons. There is a long jetty on the east side of the entrance to the creek. In 2011, the length of the project had a midchannel controlling depth of 5 feet, with depths to 7 feet in the left outside quarter, and shoaling to bare in the right outside quarter. Depths of about 5 feet may be carried to the second bridge, 5 miles above the entrance, thence 3 feet for 0.5 mile. Traffic on the creek consists chiefly of seafood and fertilizer.

(71) Mariners should be alert for unmarked fishtrap structures in Nomini Creek.

(72) The highway bridge at **Nomini**, about 3.5 miles above the entrance, has a 45-foot fixed span with a clearance of 18 feet. The fixed highway bridge at **Prospect Hill**, 5 miles above the entrance, has a 30-foot span with a clearance of 10 feet.

(73) **Currioman Bay** is separated from the west side of Nomini Bay by **Hollis Marsh,** a narrow 2-mile-long spit which is wooded in the middle. Currioman Bay has depths of 7 to 10 feet in the entrance from the head of Nomini Bay and in most of the area back of Hollis Marsh; the entrance from Potomac River at the northwest end of Hollis Marsh has depths of only 2 to 3 feet. The entrance from Nomini Bay is marked by buoys and a daybeacon.

(74) **Breton Bay**, Mile 25.2N, is a favorite anchoring ground for yachts. Commercial traffic consists chiefly of petroleum products. Drafts using the bay are mostly 6 feet or less, but occasionally vessels drawing up to 11 feet come inside.

(75) The bay has depths of 15 to 11 feet for 4.5 miles, thence about 5 feet to Leonardtown, 5 miles above the entrance.

(76) A 1,000-yard lane extends through the fishtraps off the entrance to Breton Bay; the initial course through the lane is **352°.** The shoal that extends eastward from Heron Island Bar to the Breton Bay approach is marked by an obstruction buoy, and another shoal that extends southwestward from **Huggins Point,** on the east side of the entrance, is marked by a light near its outer end. Daybeacons and lights mark the bay channel to within 0.5 mile of Leonardtown.

(77) **Combs Creek,** on the north side and 1.6 miles above the mouth of Breton Bay, had a reported controlling depth of 5 feet along the middle of the creek in 1980. The narrow entrance is between shoal spits marked by daybeacons and stakes. Ice, water, a pump-out station, some marine supplies and berthing with electricity are available. The marine railways on the west side of the creek can handle boats up to 60 feet for hull and engine repairs; lift capacity, 20 tons.

(78) A channel with a controlling depth of 6 feet, marked by piles, leads into the bight just southwestward of the entrance to Combs Creek. Gasoline, berths, and some supplies can be obtained.

(79) **Lovers Point** is on the east side of Breton Bay 3 miles above the mouth. A bar with depths of less than 1 foot extends 500 yards northwestward from the point and is marked at its outer end by a light.

(80) **Buzzard Point** is on the west side of Breton Bay 4.5 miles above the mouth. A light marks the outer end of a bar that extends off the point.

(81) **Leonardtown** is on the north side of Breton Bay 5 miles above the mouth.

(82) **St. Clements Island** is at Mile 27.0N. Near the south end of the thinly wooded island is a prominent cross which commemorates the first Catholic mass by English settlers in America on March 25, 1634. Shoals extend from the island in all directions. The long pier on the northeast side of the island has a depth of about 16 feet at the outer end; supply and fishing boats use the pier.

(83) **Heron Island Bar**, about 1 mile eastward of St. Clements Island, is an extensive shoal area mostly covered at low water; the bar is marked at the eastern and western ends by buoys.

(84) **St. Clements Bay**, north-northeastward of St. Clements Island, has three entrances. The eastern entrance, between Heron Island Bar and the mainland, is by the way of the Breton Bay lane through the fishtraps; this entrance has depths of 20 to 16 feet and is easily followed in the daytime. The middle entrance, between Heron Island Bar and St. Clements Island, has depths of 15 feet or more and is approached through a 500-yard lane in the fishtraps on an initial course of **352°;** this entrance is narrow and crooked, but is marked by a light and buoys and is easily followed in the daytime.

(85) **Dukeharts Channel**, the western entrance, leads from the Potomac River to St. Clements Bay between St. Clements Island and the mainland 0.5 mile to the north-northwestward. The controlling depth is 5 feet. In 1993, depths of 2 to 3 feet were reported 100 yards northeast of Daybeacon 7 in about 38°13'07.3"N., 76°44'46.2"W. **Note: Aids in Dukeharts Channel are placed for a passage from east to west.**

(86) St. Clements Bay has channel depths of 14 feet for 3 miles, then shoals gradually to 8 feet 5 miles above the entrance. The mean range of tide is 1.8 feet.

(87) **St. Patrick Creek**, on the west side of St. Clements Bay 0.5 mile above the mouth, is entered through a marked dredged channel. In 2009, the midchannel controlling depth in the dredged channel was 1.5 feet. The creek is much frequented by fishermen, oystermen, and pleasure craft. There are several small-craft facilities along the creek above **Palmers**, on the south side 0.4 mile above the entrance. (See the small-craft facilities tabulation on chart 12285 for services and supplies available.) The **speed limit** is 6 miles per hour in the creek.

(88) **Canoe Neck Creek** is on the west side of St. Clements Bay about 1.5 miles above the mouth. The entrance to the creek has a depth of 11 feet, except for a shoal reported encroaching the channel from the north entrance point. The creek shoals gradually from 11 feet at the entrance to 3 feet near the head. The landings at **Morris Point,** on the south side just above the entrance, have depths of 4 to 7 feet at the outer ends. A small-craft facility on Morris Point can provide gasoline.

(89) **St. Catherine Sound**, Mile 29.0N, has depths of 5 to 9 feet behind **St. Catherine Island.** Two marked dredged channels lead into the sound; one at the northwesterly end and the other at the southeasterly end. In 2009, the reported controlling depth was 1.9 feet in the northwesterly channel and 4.2 feet in the southeasterly channel. In 1983, partially submerged pilings were reported in the sound near the southeasterly channel north and east of St. Catherine Island in about 38°14'12"N., 76°47'20"W. and 38°14'35"N., 76°47'45"W. The wharves along the shore of the sound are privately owned.

(90) **Whites Neck Creek**, on the north side of St. Catherine Sound, has depths of 4 feet in the entrance and 6 to 2 feet inside. A State pier on the west side just inside the entrance has depths of 4 feet at the outer end. The marine railway just upstream can handle boats up to 45 feet for hull and engine repairs.

(91) **Wicomico River** (38°15.0'N., 76°49.6'W.) is at Mile 31.0N. Its commercial traffic consists chiefly of shellfish vessels. Drafts of vessels using the river are mostly 6 feet or less.

(92) The river is characterized by long spits, with little depth and abrupt outer ends, which extend to the edges of the channel in several places. The entrance is 1.3 miles wide between **St. Margaret Island** on the east and **Cobb Island** on the west. **Cobb Point Bar,** which extends 1 mile southeastward from the island, is marked at the outer end by a light; the shoal extending 0.6 mile westward from St. Margaret Island is marked by a daybeacon.

(93) The Wicomico River channel has depths of 40 to 12 feet for 5 miles, thence 6 feet with local knowledge for 3 miles, and then decreasing to 3 feet to the head, 11 miles above the mouth. The channel is marked at the most critical points for about 8 miles.

(94) An overhead power cable with a clearance of 38 feet crosses the river about 10 miles above the mouth. Three suspension towers in the river support the cable.

(95) **Neale Sound**, is on the west side of the entrance of Wicomico River between Cobb Island and the mainland, and affords secure anchorage for small boats. In

2009, the controlling depth into Neale Sound was 4.2 feet from the Potomac River entrance through the west cut, thence 5.6 feet from the Wicomico River entrance through the east cut. Both entrances are marked by lights, and the critical part of the channel at the northwest end is marked by daybeacons. The highway bridge over Neale Sound has a 34-foot fixed span with a clearance of 18 feet.

(96) Several small-craft facilities are on both sides of Neale Sound at the bridge. (See the small-craft facilities tabulation on chart 12285 for services and supplies available.)

(97) **Bushwood Wharf** is on the east side of Wicomico River 1.5 miles above the mouth. A State pier and a gasoline pier have alongside reported depths of 8 and 4 feet, respectively. Gasoline and some supplies are obtainable.

(98) **Charleston Creek**, on the west side of Wicomico River 3 miles above the mouth, is used by oyster boats as an anchorage.

(99) From Nomini Bay to within 2 miles of Popes Creek (38°11.6'N., 76°54.2'W.) the Virginia shore of Potomac River is backed by high ground. Along this stretch are **Nomini Cliffs, Stratford Cliffs, Horsehead Cliffs,** and the valleys between them.

(100) **Popes Creek**, Mile 33.5S, leads to **Wakefield** and the **George Washington Birthplace National Monument.** The controlling depth is about 1.5 feet in the entrance, and a stone jetty 2 feet high extends 200 feet offshore from the point on the north side. Current velocity up to 4.5 knots has been reported in the entrance.

(101) **Mattox Creek**, Mile 36.1S, has depths of 7 to 5 feet in a marked narrow channel for 2 miles to **Fox Point,** then the depths decrease to 3 feet at the fixed concrete highway bridge, 4 miles above the entrance. A marina, on the south side of the creek, can provide gasoline, berths with electricity, water, ice, a pumpout station, a launching ramp, dry and wet storage, and some marine supplies. In 2010, a depth of 6 feet was reported in the approach and alongside. Hull, engine, and electronic repairs are available; lift capacity, 40 tons.

(102) **Colonial Beach**, Mile 36.5S, is a summer resort just north of Mattox Creek. The largest of the piers on the river side of the town is the municipal 450-foot T-head pier 1.2 miles above the south end. The pier has reported depths of 6 feet at the outer end.

(103) **Monroe Creek,** back of Colonial Beach, is entered between **Gum Bar Point,** at the south end of the town, and **Sebastian Point,** 150 yards westward. The creek is used extensively as an anchorage. The dredged channel, marked by lights, buoys, and daybeacons, leads from the entrance of the creek to a basin at **Robins Grove Point** at Colonial Beach. In 2009, the controlling depths were 6.8 feet in the entrance channel to the basin, thence 5.8 feet in the basin. The entrance is narrow and mariners are requested to transit at low speed to avoid wash damage to vessels moored in the creek.

(104) There are numerous small-craft facilities along the east side of the creek below and above Robins Grove Point, and a yacht club is on the eastern side of the entrance to the creek. (See the small-craft facilities tabulation on chart 12285 for services and supplies available.)

Charts 12287, 12285

(105) **Potomac Beach** is at Mile 38.8W. A private pier is the only usable landing. In 1982, a reported depth of 2 feet was available to the landing.

(106) **Rosier Creek**, entered just westward of Potomac Beach, has depths of 2 feet in the entrance and 5 to 2 feet for 1 mile upstream. The creek has no wharves and is little used.

(107) **Upper Machodoc Creek** is at Mile 40.2W. The **Naval Surface Weapons Center** is at **Dahlgren,** on the north side of the entrance to the creek, but also occupies land for a considerable distance along the south shore; the center monitors VHF-FM channel 16 (156.80 MHz). (See **334.230,** chapter 2, for the limits and regulations governing the danger zones.) The tanks and radio masts at Dahlgren are prominent.

(108) Two well-marked, Navy-maintained channels lead from Potomac River to the basin and wharves at Dahlgren. In 1982, the main channel leading from westward, and the cutoff channel leading from southeastward, had reported centerline controlling depths of 8 feet and 7 feet, respectively. A **282°** lighted range marks the main channel.

(109) Above Dahlgren, Upper Machodoc Creek had a midchannel controlling depth of 2 feet in 2009 to **Little Ferry Landing**, about 3.5 miles above the entrance, thence 7 to 2 feet for another 2 miles to **Milford Landing**. Only small piers are found along the banks. A fixed highway bridge with a 47-foot span and a clearance of 10 feet crosses the creek 3.7 miles above the entrance.

(110) **Williams Creek**, on the north side of Upper Machodoc Creek 1 mile above the mouth, has depths of 4 to 2 feet to the highway bridge 1.1 miles above the entrance. An overhead power cable 0.6 mile above the entrance has a clearance of 28 feet.

(111) A marina is on the north side of the entrance to Williams Creek. Gasoline, diesel fuel, berthing with electricity, a pump-out station, a launching ramp, wet and dry storage, and marine supplies are available. In 2010, a depth of 6 feet alongside was reported. Hull, engine, and electronic repairs can be made; lift capacity, 12 tons.

(112) **Lower Cedar Point** is at Mile 42.1E. A light is shown from a white skeleton tower on piles in depths of 3 feet on the west edge of the main channel 0.7 mile westward of the point.

(113) **Morgantown** is on the south side of Lower Cedar Point. There are strong cross currents south of the point. The landings that remain intact are suitable only for small boats.

Charts 12288, 12285

(114) The **Harry W. Nice (Potomac River) Bridge,** (U.S. Route 301), Mile 43.4, has a fixed channel span with clearances of 135 feet for a width of 480 feet and 105 feet for a width of 700 feet. The centerline of the main span has a sound signal and is marked by a flashing red aviation obstruction light and by a fixed green light surmounted by three fixed white lights vertically 15 feet apart. The bridge is also marked by fixed red lights on the main trusses and approaches.

(115) There is a small-boat basin and marina just above the Harry W. Nice Bridge on the Maryland side. The entrance channel and basin have depths of about 6 feet. Gasoline, diesel fuel, berths, and marine supplies are available. Hull and engine repairs can be made; lift, 20 tons.

Danger zone

(116) A **danger zone** for military testing operations extends 4 miles upriver from the Harry W. Nice Bridge. (See **334.230**, chapter 2, for limits and regulations.)

(117) **Persimmon Point** is at Mile 44.5W. A 3-foot shoal is 0.6 mile southeastward of the point on the west edge of the channel.

(118) **Popes Creek**, Mile 45.4E, is not navigable. The village of **Popes Creek** 0.2 mile northward, has overnight docking available at a crabhouse pier. The former railroad wharf is in ruins.

(119) Between Popes Creek and Upper Cedar Point, 4.5 miles upriver, the Maryland shore of Potomac River bends northward about 2 miles to form **Port Tobacco River Flats,** which have shoal spots of 3 to 5 feet but generally navigable depths of 7 to 10 feet. **Port Tobacco River,** at the head of the bight, has depths of 7 feet for 1.6 miles and thence 5 to 3 feet for another 1.3 miles. A light and daybeacons mark the channel.

(120) **Chapel Point**, on the east side of Port Tobacco River 1.2 miles above the mouth, is a summer resort. **Port Tobacco,** 4.4 miles above the entrance, is now the head of practical navigation. Marinas at the town have gasoline, berths, and some supplies. Hull and engine repairs can be made; lift, 15 tons.

(121) **Mathias Point** is at Mile 47.7S. A light is shown from a skeleton tower on piles in depths of 3 feet on the south edge of the main channel 0.3 mile northward of the point.

(122) **Upper Cedar Point**, at Mile 50.0N, is marked by a light shown from a skeleton tower on piles in depths of 3 feet on the north edge of the channel 0.5 mile southeastward of the point. Give the light a berth of at least 200 yards.

(123) **Nanjemoy Creek**, Mile 51.0N, has a controlling depth of about 4 feet in a privately marked channel to a small-craft launching ramp about 4 miles above the entrance.

(124) **Metomkin Point** is at Mile 53.1S. A light, shown from a pile structure in depths of 1 foot 0.5 mile off the point, marks the shallowest part of a shoal area along the southeast edge of the channel.

(125) **Maryland Point Light** (38°20'59"N., 77°11'51"W.), Mile 55.8S, 42 feet above the water, is shown from a skeleton tower with a black and white diamond-shaped daymark on piles in depths of 9 feet on the south edge of the Potomac River channel 0.7 mile southeastward of **Maryland Point.** Other shoals east and west of the light are marked by buoys.

(126) Two white dish-shaped antennas 1.4 miles northwest of Maryland Point are conspicuous.

(127) Gasoline, ice, water, a pump-out station and limited berthing with electricity can be obtained at **Fairview Beach**, Mile 57.4S. Depths to the pier are about 4 feet. Hull and engine repairs can be made; lift capacity, 25 tons.

(128) **Potomac Creek**, Mile 58.5S, is used only by small motorboats. **Bull Bluff,** on the south side of the entrance, is high and wooded. The creek has depths of 7 feet in the entrance, thence 3 feet for 2 miles. The best water favors the south side of the entrance. Gasoline and water are available at small-craft facilities on the south side of the creek 1 mile and 2 miles above the entrance. Hull and engine repairs can be made at the more easterly facility.

(129) **Aquia Creek**, Mile 60.4W, has depths of 4 to 5 feet to the railroad bridge, and thence 2 feet to **Coals Landing,** 5 miles above the mouth. The entrance to the creek is marked by lights and daybeacons. A fixed railroad bridge, 3 miles above the entrance, has a width of 46 feet and a clearance of 26 feet. An overhead power cable just south of the bridge has a clearance of 36 feet. Small-craft facilities are on the south side of the creek close above and below the bridge. (See the small-craft facilities tabulation on chart 12285 for services and supplies available.)

(130) **Smith Point**, Mile 61.5E, is marked by a light. **Clifton Beach** is on the point. The broken piling of a former landing 300 yards south of the light is nearly awash at high water.

(131) There is danger of striking submerged hulks in the mile-wide former restricted anchorage area that extended 2.5 miles upriver along the Virginia shore from directly opposite Smith Point.

(132) **Liverpool Point** is at Mile 64.4E. **Mallows Bay**, on the north side of Liverpool Point, is a ship graveyard area; the western danger limit is a line from Liverpool Point to Sandy Point. A buoy marks the inner edge of the river channel off the bay. The southern part of the bay has unobstructed depths of 5 feet to the submerged wreck near the head. On the southern shore is a small bulkhead landing.

(133) An aviation school wharf at Mile 66.2W has depths of about 8 feet at the outer end. The short dredged channel to the wharf has a reported controlling depth of about 6 feet. About 0.2 mile north of the wharf, a diversion

canal 5 feet deep connects **Chopawamsic Creek** with the Potomac River; three fixed bridges over the canal have a minimum width and clearance of 10 feet. An overhead power cable between the two uppermost bridges has a clearance of 17 feet.

(134) A **restricted area** has been established on the Potomac River around Chopawamsic Creek and Chopawamsic Island. (See **33 CFR 334.235**, chapter 2, for limits and regulations.)

(135) **Quantico**, Mile 67.7W, is a training site of the **U.S. Marine Corps**. The T-head pier has depths of 25 to 30 feet at the face, and the launch harbor immediately south of the pier has depths of about 10 feet. Except in emergencies, the pier and harbor are restricted to government vessels.

(136) **Quantico Creek**, Mile 68.2W, has depths of 7 feet in a narrow, crooked entrance channel, and about 2 feet for 2 miles upstream. The fixed railroad bridges over the entrance have 30-foot spans with a clearance of 12 feet. An overhead power cable along the west side of the bridge, and another one 1.3 miles above the bridge, have clearances of 8 feet and 41 feet, respectively. A small landing on the south side of the entrance is used by local pleasure boats.

(137) **Possum Point** is at Mile 68.5W. A private light marks the powerplant wharf 0.2 mile northward of the point. An overhead power cable 0.8 mile above Possum Point has a clearance of 170 feet for a midwidth of 1,440 feet over the main channel, and 124 to 70 feet elsewhere. The six support structures for the cable are marked by lights.

(138) **Chicamuxen Creek**, Mile 69.2E, has depths of 5 feet in the entrance, but shoals rapidly farther up. The creek is little used.

Danger zone

(139) A **danger zone** of a Navy explosion test area includes part of Chicamuxen Creek and extends northeastward in Potomac River up to 0.5 mile off the Maryland shore for about 5 miles to Indian Head. (See **334.240,** chapter 2, for limits and regulations.)

(140) An oil and asphalt terminal is at **Cockpit Point,** Mile 70.3W.

(141) The Government wharf at the north end of **Stump Neck,** Mile 70.6E, has depths of 15 feet at the outer end and is marked by a light. Lights also mark the ends of the breakwater on the north side. Landing is permitted only in case of emergency.

(142) **Mattawoman Creek**, Mile 71.5E, has easily navigated depths of 7 to 5 feet for 1 mile to the marsh that extends southeastward from **Deep Point** to the edge of the channel. The channel is marked by a daybeacon and lights. Above this marsh, the creek channel has greater depths for 3 miles, but meanders back and forth between the flats and is almost impossible to follow without a guide. A pier and launching ramp for a public picnic facility is at **Sweden Point,** 2 miles inside the entrance. In 1979, depths of about 3 feet were reported available to the dock.

(143) **Powells Creek**, Mile 71.1W, has depths of 4 to 5 feet in the approach and 1 to 2 feet through the railroad bridge and for a short distance upstream. The fixed railroad bridge 0.3 mile above the entrance has a width of 40 feet and a clearance of 26 feet. An overhead power cable at the bridge has a clearance of 45 feet.

Charts 12289, 12285

(144) **Occoquan Bay**, Mile 73.8W, has general depths of 5 to 7 feet. The entrance is 2.5 miles wide between **Freestone Point** on the southwest and **High Point** on the northeast; the channel is 0.3 mile off High Point. A manmade rocky islet, 5 feet high, is near the center of the bay, 1 mile westward of High Point. The bay has little commerce; it and its tributaries are used as an ice harbor when the river channel is closed above.

(145) **Neabsco Creek**, at the southwest side of Occoquan Bay north of Freestone Point, has depths of 4 to 2 feet. The fixed railroad bridge over the mouth has a 30-foot span with clearance of 33 feet. The overhead cables just west of the bridge have a clearance of 36 feet. Gasoline, diesel fuel, ice, water, a pump-out station, berthing with electricity and marine supplies can be obtained at the small-craft facilities on the south side of the creek above the bridge. Hull, engine and electronic repairs can be made; lifts up to 20 tons.

(146) **Belmont Bay**, the northeastern arm of Occoquan Bay, has general depths of 3 to 4 feet. Belmont Bay is said to be rocky throughout; the rocks are covered at low water except during northwest winds.

(147) **Occoquan River** empties into the head of Occoquan Bay along the west side of Belmont Bay. A marked channel with dredged sections leads through the bay and river to Occoquan. In 2010, the controlling depth was 6 feet from the entrance in Occoquan Bay to Light 14. The channel is marked through Occoquan Bay to the first bridge over Occoquan River.

(148) Three fixed bridges, the Richmond, Fredericksburg, and Potomac Railroad bridge, and the two U.S. Route 1 highway bridges, with a least clearance of 44 feet cross Occoquan River 3.6 miles above the bay entrance. Piles extend out into the channel on both sides of the first bridge. An obstruction, covered 1 foot, is on the north side of the third bridge, in about the center of the river. The twin I-95 fixed highway bridges, 4 miles above the entrance, have a clearance of 44 feet. The State Route 123 fixed highway bridge, 5 miles above the entrance, has a clearance of 25 feet. In 2003, a replacement fixed highway bridge was under construction with a design clearance of 44 feet. A rock awash is on the north side of the bridge, in about the center of the river. A power cable just northwestward of the bridge has a clearance of 44 feet.

(149) **Occoquan**, on the southwest side of Occoquan River 5 miles above the bay entrance, is the head of navigation. Channel depths off the Occoquan bulkheads are 7 feet in the east half and 5.5 feet in the west half of the channel in 1991. Small-craft facilities, on the southwest side of the river above the first bridge, can provide gasoline, water, berths, and marine supplies. Hull and engine repairs can be made; lift capacity to 25 tons.

(150) Indian Head, Mile 75.3S, is a high wooded bluff. The town of **Indian Head** is back of the bluff. The lower wharf has depths of 12 feet off its northern face, and the small-boat basin on the lower side has depths of 4 feet. The upper wharf has depths of 12 to 15 feet at the face. Landing is permitted at either wharf only in case of emergency. Mariners are advised to use caution in the vicinity of the upper wharf because divers may be training in the area.

(151) **Craney Island**, Mile 77.3W, is a tiny islet marked by a clump of trees and surrounded by an extensive shoal. Between the islet and the Virginia shore is a narrow unmarked channel with depths of 7 feet.

(152) **Pomonkey Creek**, Mile 78.0E, has depths of 7 to 3 feet in the entrance but little water inside.

(153) **Gunston Cove**, Mile 80.0W, has depths of 3 to 5 feet in the entrance and 5 to 7 feet inside. The peninsula between Gunston Cove and Dogue Creek, 2 miles to the northeastward, is a part of the U. S. Army reservation of **Fort Belvoir.**

(154) The small-boat basin and facilities at **Whitestone Point,** on the north side of the Gunston Cove entrance, are part of Fort Belvoir and are not for public use. A **restricted area** is established off Whitestone Point. (See **334.250,** chapter 2, for limits and regulations.)

(155) **Pohick Bay** and **Accotink Bay,** which joins at the head of Gunston Cove 2 miles from the entrance, have depths of 2 to 3 feet for about 0.5 mile from the junction. Pohick Bay is foul with submerged duckblind and fish stakes. Parts of both bays are within the **danger zone** of a Fort Belvoir target range. (See **334.230,** chapter 2, for limits and regulations.)

(156) **Dogue Creek**, Mile 81.9W, is used by small craft. A privately marked channel leads from the river across the northwest part of the estuary to the mouth of the creek. In 1980, reported depths in the channel were 3 feet, with 1 to 5 feet in the creek. The extreme north corner of the estuary is foul with grass and submerged duckblind stakes.

(157) **Marshall Hall**, Mile 82.3S, formerly an amusement park, has a wharf with about 10 feet reported alongside. The wharf is in poor condition; landing is not permitted.

(158) **Mount Vernon**, the home of George Washington, is at Mile 83.2N. The custom of tolling the ship's bell while passing Mount Vernon is said to have originated the night of Washington's death, December 14, 1799. The buildings are open to the public daily from 0900 to 1700 during the summer and 0900 to 1600 during the winter. Excursion boats operate between Mount Vernon and the city of Washington, DC. The buoyed dredged channel leading to Mount Vernon wharf had a controlling depth of 5.6 feet (7.0 feet at midchannel) to the wharf and a depth at 5.0 feet shoaling to 2.8 feet at the wharf in 2008.

(159) **Little Hunting Creek**, Mile 83.9N, has depths of 2 feet in the approach and about 4.5 feet in a narrow channel, sometimes marked by private buoys, for about 0.6 mile above the entrance. A stone-arch bridge over the entrance has a clearance of 22 feet for a center width of 25 feet.

(160) **Piscataway Creek**, Mile 85.4S, has depths of 1 to 3 feet. Some marine supplies, gasoline, diesel fuel, berthing with electricity, water, ice and a pump-out station are available at a marina on the north side of the creek 0.5 mile inside the entrance. Approach and alongside depths were reported at 5.5 feet. Hull and engine repairs can be made; lift capacity, 30 tons.

(161) **Fort Washington**, Mile 85.8E, was built early in the 19th century for the protection of the then new Nation's capital; the fort is now a unit of National Capital Parks. There is a light on shore at the fort.

(162) **Broad Creek**, Mile 88.0E, has depths of 2 to 4 feet. **Indian Queen Bluff** is on the north side of the entrance. The creek is little used.

(163) **Rosier Bluff**, Mile 89.4E, is wooded and prominent. Only piles remain of the wharf just below the bluff. A light is shown from a pile in depths of 6 feet, below the bluff.

(164) **Hunting Creek**, Mile 90.0W, has depths of 1 to 4 feet. Fixed highway bridges cross the creek 0.6 and 0.9 mile above the entrance. The lower bridge is a three-arch structure with a width of 44 feet and a clearance of 9 feet for a width of 20 feet; the upper bridge has a clearance of 3 feet. Piles marking an abandoned channel are in the north part of Hunting Creek entrance. Numerous tree trunks, logs, wrecks, mudflats, and other obstructions are in the entrance to the creek.

(165) On the Maryland side opposite Hunting Creek is an extensive bight dredged for sand and gravel. Depths are 8 to 20 feet in the inner part of the bight but only 1 to 5 feet along the edge of the river channel.

(166) **Jones Point**, Mile 90.5W, is on the north side of the entrance to Hunting Creek and at the lower end of the Alexandria waterfront. **Woodrow Wilson Memorial Bridge,** Mile 90.7, which connects Jones Point with the Maryland shore, has a bascule span with a clearance of 76 feet; a sound signal is at the channel span of the bridge. (See **117.1 through 117.59 and 117.255,** chapter 2, for drawbridge regulations.) Rocks are on the western edge of the channel just southward of the bridge in 38°47'24"N., 77°02'23"W.

(167) **Alexandria**, Mile 91.4W, has some waterborne traffic. Foreign vessels drawing as much as 23 feet unload newsprint and some general cargo.

(168) **Pilotage** to Alexandria was discussed at the beginning of the chapter.

Towage

(169) Tugs are not normally required for docking and undocking. No tugs are available at Alexandria or Washington, DC.

Quarantine, customs, immigration, and agricultural quarantine

(170) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(171) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(172) Alexandria is a **customs port of entry.**

Harbor regulations

(173) Jurisdiction of the District of Columbia harbormaster extends upriver from Jones Point. Harbor regulations provide a **speed limit** of 10 m.p.h. when passing the wharf area of Alexandria, except in emergencies.

(174) The Alexandria waterfront extends about 1.5 miles north of the Woodrow Wilson Memorial Bridge. Some of the wharves are owned by the Government; several of the privately owned wharves are open to the public by special arrangement. Depths of 20 to 25 feet are at the outer ends of the wharves; in places old piling is a hazard to approaching vessels. Robinson south and north terminals are 0.45 mile and 0.9 mile above the bridge, respectively; each has a 300-foot face with depths of 25 feet alongside. (For information on the latest depths alongside the facilities at Alexandria, contact the individual operators.) Water is available at most of the facilities; cargo is handled by ship's tackle. There are no major repair facilities for oceangoing vessels at Alexandria; the nearest such facilities are at Baltimore, MD, and in the Hampton Roads area.

Small-craft facilities

(175) Small-craft facilities along the Alexandria waterfront can provide gasoline, diesel fuel, water, berths, and marine supplies. Hull and engine repairs can be made; largest marine railway, 35 feet; lift, 16 tons.

(176) **Oxon Creek**, Mile 91.6E, has bare flats in the approaches and general depths of 1 to 3 feet inside. Sand dredges have cut channels through the flats and made holes inside, but local knowledge is needed to find the deeper water. The fixed highway bridge over the creek has a clearance of 19 feet.

(177) **Marbury Point** is at Mile 92.1E. A privately buoyed channel with reported depths of about 12 feet leads to the point. Just northward is the Blue Plains sewage-disposal plant. The Government pier 0.4 mile above Marbury Point extends to deep water; use of the pier is restricted to Government vessels.

(178) **Fourmile Run**, Mile 93.0 W, is used only by very small boats and skiffs at high water. The outer basin is navigable for small boats, using care, local knowledge, and the chart as guides. Airport landing lights extend 0.5 mile into the basin from the north side. The Washington Sailing Marina is in the cove on the south side of the basin just above the entrance. In 2000, the controlling depths were 5.8 feet (7.3 feet at midchannel) in the marina entrance channel, thence depths of 7.7 feet to 11.1 feet were in the cove, with much lesser depths along the sides.

(179) **Ronald Reagan Washington National Airport** occupies the extensive fill area on **Gravelly Point** at Mile 94.1W. Many domestic airlines use the airport day and night.

(180) **Giesboro Point** is at Mile 94.0E. Submerged pile remains of former wharves extend out about 150 feet from shore in the vicinity of the point.

(181) **Washington, DC**, on the east side of Potomac River 96 miles above the mouth, is the **Capital of the United States.** The city, with its impressive memorials and public buildings, is one of the most beautiful in the world and is host to a constant stream of visitors. Prominent from the river are the Capitol Dome, the Washington Monument, and the Lincoln and Jefferson Memorials.

(182) Commercial traffic in Washington Harbor consists chiefly of petroleum products, sand, and gravel.

Tides and currents

(183) Daily predictions for Washington are given in the Tide Tables. Currents are variable, but the set is usually in the directions of the channels, and there is little or no flood current during freshets; information for several places in Washington Harbor is given in the Tidal Current Tables.

Ice

(184) **Ice** closes the river at Washington during severe winters, but power vessels keep the channels open during ordinary winters. During the highest freshet in recent years, the river rose about 11.5 feet above mean low water in Washington Channel.

Weather

(185) Washington summers are warm and humid, and winters are mild; generally, pleasant weather prevails in the spring and autumn. The coldest weather occurs in late January and early February. The warmest weather occurs late in July. There are no well-pronounced wet and dry seasons. Thunderstorms, during the summer, often bring sudden and heavy rain showers and may be attended by damaging winds, hail, or lightning.

(186) The average annual temperature in Washington is 58.0°F (14.4°C). The average maximum temperature is 66.7°F (19.3°C) while the average minimum is 48.9°F (9.4°C). The warmest temperature on record at Washington is 105°F (40.6°C) recorded in August 1997 and the coolest temperature on record is -5°F (-20.6°C) recorded in January 1982. Each month, October through April, has recorded temperatures below freezing (0°C) and each month, June through September, has recorded maximums in excess of 100°F (37.8°C). Records of the past 20 years show the average date of the last freezing

temperature in the spring to be March 29 and the latest, April 16. The average date of the first freezing temperature in the fall is November 10 and the earliest, October 21.

(187) The average annual precipitation at Washington totals 39.39 inches (1001 mm). Precipitation is evenly distributed with the spread between the wettest month (August) and the driest month (February) being only 1.48 inches (37.6 mm). The greatest 24-hour precipitation total is 6.11 inches (155.2 mm) recorded in June 1972.

(188) Snowfall is moderate and average 17.1 inches (434.3 mm) each year. Snow has fallen in each month, October through April. The greatest 24-hour snowfall occurred in February 1983 when 16.4 inches (416.6 mm) accumulated.

(189) Tropical disturbances occasionally, during their northward passage, influence Washington's weather mainly with high winds and heavy rainfall, but extensive damage from this cause is rare. Six tropical storms have had a direct impact upon Washington since 1950. Perhaps the most noteworthy was hurricane Hazel in 1954. Hazel passed to the west of the District while transitioning from a warm-core to a cold-core system. The storm provided sustained winds of 68 knots with gusts to 85 knots over a three-hour period.

(190) Occasional overflows from the Potomac River result from heavy rain over the basin, at times augmented by melting snow. In a few cases during cold winters, ice forms on the river, and, in spring, flooding is caused by ice gorges when the ice breaks up. The river is in tidewater, and above normal tides associated with hurricane or severe storms along the coast cause flooding at times. Local flooding in the area is also caused by locally heavy rain. Some flooding occurs from one or the other of these causes every year on the average.

(191) In using the Climatological Tables for the area note that recent observations have been taken at the National Airport, which is in a warmer part of the area. Minimum and maximum temperatures in nearby areas may be 8° and 5° lower, respectively, and rain and snowfall amount may be slightly higher away from the airport. (See Appendix B for **Washington climatological table.)**

(192) **Pilotage to Washington, DC**, was discussed at the beginning of the chapter.

Towage

(193) There are no tugs at Washington, DC or Alexandria.

Quarantine, customs, immigration, and agricultural quarantine

(194) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(195) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(196) Washington, DC is a **customs port of entry.**

Harbor regulations

(197) The District of Columbia Harbormaster, who is the officer commanding the Harbor Precinct of the Metropolitan Police Department, regulates the operation, navigation, mooring, and anchoring of all vessels within the waters of the District of Columbia and enforces all laws and regulations relating thereto. The person in charge of any vessel, 26 feet or more long, entering the harbor, shall, if he intends to remain over 24 hours, report the date and time of arrival without delay and shall also report immediately before finally departing, to the harbormaster at the Harbor Precinct wharf, Maine Avenue and M Street, SW., or to any police officer under his command. Permission to anchor in the District of Columbia must be obtained from the harbormaster. Both the harbormaster and the police boat monitor VHF-FM channel 16; call sign KUF-703.

(198) At Mile 94.2 is the junction of Potomac River with **Anacostia River** to the eastward, Washington Channel to the northward, and Georgetown Channel of the Potomac River to the westward. The lighted junction buoy also marks the outer end of the shoal making southerly from **Hains Point,** 0.4 mile north of the junction. **Washington Harbor** comprises the navigable waters upstream from this junction.

(199) A dredged channel leads from the Potomac River off Hains Point into the Anacostia River to a basin off Washington Navy Yard, through the 11th and 12th street bridges, and to a turning basin about 2.0 miles above the Hains Point Junction Lighted Buoy (38°51'06"N., 77°01'20"W.). (See Notice to Mariners and latest editions of the charts for controlling depths.)

(200) Harbor regulations prescribe a **speed limit** of 6 m.p.h. between the entrance to Anacostia River and the Benning Road Bridge, a distance of 4.4 miles.

(201) Anacostia River is crossed by 10 bridges between the entrance and the head of navigation. The Frederick Douglass Memorial Bridge (South Capitol Street Bridge), 1.4 miles above the entrance, has a swing span with a clearance of 40 feet. In 1986, it was reported that the bridge is not tended. At least 24 hours notice is required for openings; telephone 202-727-5522. (See **117.1 through 117.59 and 117.253**, chapter 2, for drawbridge regulations.)

(202) The Eleventh Street Bridge, 2.2 miles above the mouth, was under construction in 2011. Twelfth Street Bridge has a fixed channel span with a clearance of 28 feet. The remaining fixed bridges have a minimum width of 40 feet and clearance of 12 feet. The CSX Railroad Bridge, 3.3 miles above the mouth, has a vertical-lift span with a width of 33 feet and clearance of 5 feet down and 29 feet up. (See **117.1 through 117.59 and 117.253,** chapter 2, for drawbridge regulations.)

(203) Overhead cables of unknown clearances cross the river on either side of the CSX Railroad Bridge, about 6.5 miles above the mouth.

(204) The waterfront of Anacostia River extends along the north side for about 3 miles above the entrance.

The Washington Navy Yard Annex occupies the area just above the first bridge to the second bridge; depths at the easternmost pier (which is normally used for visiting vessels) range from 15 to 17 feet. Most of the other piers and bulkhead wharves are privately owned. Oil terminals are just below the first bridge and just above the third bridge.

Small-craft facilities

(205) There are small-craft facilities on the north side of Anacostia River just above the mouth; between the third and fifth bridges; and at **Bladensburg,** 7 miles above the mouth. (See the small-craft facilities tabulation on chart 12285 for services and supplies available.)

(206) **Washington Channel** extends northward along the east side of Hains Point for 2 miles to the Fourteenth Street causeway. (See Notice to Mariners and latest editions of the charts for controlling depths.) The channel is unmarked above Hains Point. A fixed highway bridge at the upper end of the channel has a clearance of 37 feet.

(207) Harbor regulations prescribe a **speed limit** of 6 m.p.h. upstream from Hains Point.

(208) The waterfront facilities are on the eastern side of Washington Channel. Pier 5, 1 mile above Hains Point, has depths of about 23 feet at the outer end; it is the headquarters of the harbormaster and is used by his patrol boats and Police and Fire Department. Pier 4, just northward, has depths of about 23 feet at the outer end; it is used by excursion boats. The municipal fish and fresh oyster wharves are just below the highway bridge, 1.5 miles above Hains Point.

(209) Slips and minor repair facilities for pleasure craft are at the north end of Washington Channel. Hull and engine repairs can be made: lift capacity, 20 tons. Water, berthing with electricity and marine supplies are available.

(210) **Georgetown Channel** is that part of the Potomac River between Hains Point and just above Chain Bridge. In 2007, the midchannel controlling depth was 8.6 feet to the George Mason Memorial Bridge, thence 11.2 feet at midchannel to the Arlington Memorial Bridge, thence 13.9 feet at midchannel to the Francis Scott Key Bridge at Georgetown. The channel from Key Bridge to Chain Bridge, about 2.7 miles above, has unpredictable currents, and numerous shoals and rocks. This part of the channel is used by small craft with local knowledge; mariners are advised to exercise caution.

(211) Georgetown Channel is crossed by eight bridges between Hains Point and Chain Bridge, Mile 101. All bridges have either fixed spans or drawspans fixed in the closed position. (See **117.255,** chapter 2, for drawbridge regulations.) The minimum width of the bridges is 104 feet and the clearance is 18 feet.

(212) The **Tidal Basin** is on the northeast side of Potomac River 1.6 miles above Hains Point. A fixed bridge with a clearance of 11 feet crosses the entrance; tide gates obstruct the entrance.

(213) Directly across the river from the Tidal Basin is the **Pentagon Lagoon.** In 2000, the controlling depth was 7.5 feet in the entrance channel, thence depths of 5 to 8 feet were at the marina on the north side of the lagoon. Depths of about 2 to 7 feet are available in the rest of the lagoon. The fixed bridge over the entrance has a vertical clearance of 18 feet and a horizontal clearance of 46 feet. Complete berthing facilities, gasoline and some supplies are available at the marina. Hull and engine repairs can be made; marine railway, 30 feet. **Boundary Channel,** which extends northward from the lagoon between **Columbia Island** and the Virginia shore, is shallow and is crossed by several fixed bridges.

(214) **Arlington Memorial Bridge** is 2.3 miles above Hains Point and 97 miles above the mouth of Potomac River. Harbor regulations prescribe a speed limit of 6 m.p.h. above the bridge.

(215) **Theodore Roosevelt Island**, Mile 97.5W, is a park area. Boats should not attempt to pass between the island and the Virginia shore.

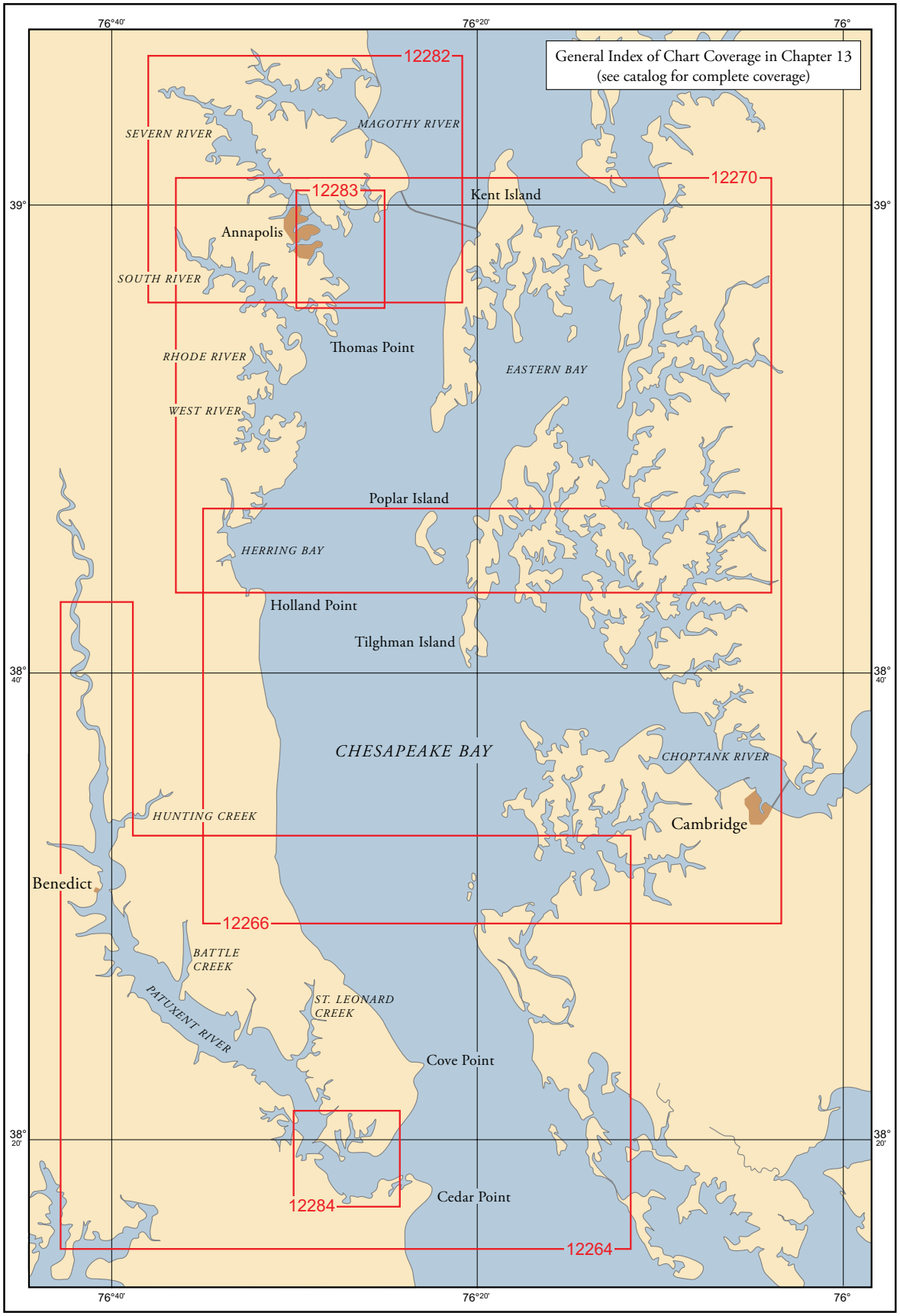
(216) **Francis Scott Key Bridge** is at Mile 98.3. The stone piers of the former Aqueduct Bridge, just above Key Bridge, have been removed to a depth of 10 feet except for the one nearest the Virginia shore, which is 9 feet above water.

(217) The commercial wharves are on the north side of Georgetown Channel at **Georgetown** between Key Bridge and **Rock Creek,** 0.6 mile downriver. The wharves, which are mostly of the bulkhead type, are privately owned. In 1980, only one wharf was active; it receives sand and gravel, and stone is shipped by barge.

(218) **Chain Bridge**, Mile 101, is the head of tidewater navigation on the Potomac River.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12233	Point Lookout	38°02'N/76°19'W	1.5	1.4	0.2
12233	Piney Point, Potomac River	38°08'N/76°32'W	1.6	1.5	0.1
12233	Kinsale, Potomac River	38°02'N/76°35'W	1.4	1.3	0.1
12285	Colton Point, Potomac River	38°13'N/76°45'W	2.1	1.9	0.1
12285	Riverside, Potomac River	38°23'N/77°09'W	1.5	1.4	0.1
12285	Indian Head	38°36'N/77°11'W	2.1	1.9	0.1
12285	Alexandria	38°48'N/77°02'W	3.0	2.8	0.2
12285	Marshall Hall, Potomac River	38º41'N/77°06'W	2.6	2.4	0.1
12285	Washington, Washington Channel	38°52'N/77°01'W	3.2	2.9	0.1
12285	Quantico, Potomac River	38º31'N/77°17'W	1.6	1.5	0.1
12285	Aquia Creek, Potomac River	38°25'N/77°21'W	1.5	1.4	0.1
12285	Mathias Point, Potomac River	38°24'N/77°03'W	1.4	1.3	0.1
12285	Colonial Beach, Potomac River	38°15'N/76°58'W	1.9	1.8	0.1
12285	Ragged Point, Potomac River	38°09'N/76°37'W	1.7	1.6	0.1
12285	Lewisetta, Potomac River	38°00'N/76°28'W	1.5	1.4	0.1
12285	Bladensburg, Anacostia River	38°56'N/76°56'W	3.3	3.1	0.2
12285	Washington Navy Yard, Anacostia River	38°52'N/77°00'W	3.2	3.0	0.2
12285	Kenilworth Aquatic Garden, Anacostia River	38°55'N/76°57'W	3.3	3.1	0.2
12286	Lower Cedar Point, Potomac River	38°21'N/76°59'W	1.7	1.6	0.1
12286	Mount Holly, Nomini Creek	38°06'N/76°44'W	1.7	1.6	0.1
12287	Dahlgren, Upper Machodoc Creek	38°19'N/77°02'W	1.8	1.7	0.1
12288	Clifton Beach, Potomac River	38°25'N/77°16'W	1.3	1.2	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 November 2011


General Index of Chart Coverage in Chapter 13
(see catalog for complete coverage)
76°40'
76°20'
76°
39°
38° 40'
38° 20'
12282
12283
12270
12266
12284
12264
SEVERN RIVER
MAGOTHY RIVER
Kent Island
Annapolis
SOUTH RIVER
Thomas Point
RHODE RIVER
EASTERN BAY
WEST RIVER
Poplar Island
HERRING BAY
Holland Point
Tilghman Island
CHESAPEAKE BAY
CHOPTANK RIVER
HUNTING CREEK
Cambridge
Benedict
BATTLE CREEK
PATUXENT RIVER
ST. LEONARD CREEK
Cove Point
Cedar Point

Chesapeake Bay, Patuxent and Severn Rivers

(1) This chapter describes the western shore of Chesapeake Bay from Point Lookout, on the north side of the entrance to Potomac River, to Mountain Point, the northern entrance point to Magothy River. Also described are Patuxent River, Herring Bay, West River, South River, Severn River, and Magothy River, the bay's principal tributaries; the ports of Solomons Island, Benedict, Chesapeake Beach, Shady Side, Galesville, and Annapolis; and several of the smaller ports and landings on these waterways.

COLREGS Demarcation Lines

(2) The lines established for Chesapeake Bay are described in **80.510,** chapter 2.

Charts 12230, 12263, 12273

(3) From Potomac River to Patuxent River, the western shore of Chesapeake Bay is mostly low, although the 100-foot elevation does come within 1 mile of the water midway between the two rivers. Above Patuxent River, the ground rises and 100-foot elevations are found close back of the shore along the unbroken stretch northward to Herring Bay. Above Herring Bay, the 100-foot contour is pushed back by the tributaries. Except for the developed areas, the shore is mostly wooded.

(4) The bay channel has depths of 50 feet or more, and is well marked by lights and buoys.

(5) The **fishtrap areas** that extend along this entire section of the western shore are marked at their outer limits and are shown on the charts.

Ice

(6) **Ice** is encountered in the tributaries, particularly during severe winters. When threatened by icing conditions, certain lighted buoys may be replaced by lighted ice buoys having reduced candlepower or by unlighted buoys, and certain unlighted buoys may be discontinued. (See Light List.)

(7) During the ice navigation season, the waters of Chesapeake Bay and its tributaries north of Smith Point, but not including Patuxent River, are a **regulated navigation area.** (See **165.1 through 165.13, and 165.503,** chapter 2, for limits and regulations.)

Chart 12230

(8) The **danger zone** of an aerial firing range and target area begins off Point Lookout and extends northward to **Cedar Point.** (See **334.200**, chapter 2, for limits and regulations.) The target areas in the danger zone are marked by lighted buoys.

(9) A middle ground with depths of 10 to 18 feet is about 8 miles eastward of Point Lookout; the area is about 7 miles long in a north-south direction and 2 miles wide. The stranded wreck near the middle of the shoal is marked a light.

(10) A **fish haven** is about 4.4 miles NNE of Point Lookout in about 38°06'28"N., 76°17'57"W.

Chart 12233

(11) **St. Jerome Creek**, 5 miles north of Point Lookout, is entered through a channel marked by lights, daybeacons, and bush stakes to a basin about 0.5 mile above the entrance, thence northward into the creek. In 2008, the controlling depths were 2.1 feet in the entrance channel and 5.5 feet in the basin, thence 5.5 feet in the channel above the basin. In 1998, severe shoaling was reported in the vicinity of St. Jerome Creek Daybeacon 3. The creek is used principally as an anchorage for oyster and fishing boats.

(12) There are several small wharves along St. Jerome Creek. A landing is at **Airedele**, on the south side of the creek just above the entrance; gasoline is available. In 2006, the dredged channel leading south from St. Jerome Creek into **Southern Prong** had a controlling depth of 4.9 feet. Private daybeacons mark the channel to a marina in Southern Prong. Berths with electricity, gasoline, water, ice, a launching ramp, a 40-foot marine railway, and partial hull repairs are available.

(13) **Point No Point**, on the west side of Chesapeake Bay 6 miles north of Point Lookout, has no prominent natural marks. **Point No Point Light** (38°07'42"N., 76°17'24"W.), 52 feet above the water, is shown from a white octagonal brick dwelling on a brown cylinder, in depths of about 22 feet, 1.6 miles southeastward of the point. The light is 1.7 miles due west of a point on the bay ship channel 76.4 miles above the Capes.

(14) An unmarked submerged obstruction, with a reported depth of 30 feet, is about 5.9 miles north-northwestward of Point No Point in about 38°14'09"N., 76°20'18"W.

(15) **Hooper Island Light** (38°15'24"N., 76°15'00"W.), 63 feet above the water, is shown from a white conical tower on a brown cylindrical base, in depths of 18 feet near the outer edge of the shoals, 3 miles westward from Hooper Islands; a seasonal sound signal is sounded at

the light. The light is 2.8 miles due east of a point on the bay ship channel 84.4 miles above the Capes.

Chart 12264

(16) The enclosed naval seaplane basin 8.5 miles north-northwestward of Point No Point and 2 miles southwestward of Cedar Point has depths of about 10 feet. The entrance to the basin is between two breakwaters, each marked at their outer ends by a light.

(17) **Cedar Point** (38°17.9'N., 76°22.5'W.) is 10 miles north-northwest of Point No Point. The ruins of an abandoned lighthouse are on the tiny islet 0.3 mile off the point. The shoal extending 0.5 mile eastward from the islet is marked at its outer end by a lighted buoy. A **fish haven**, marked by private buoys, is 0.6 mile northwestward of Cedar Point.

Charts 12264, 12284

(18) **Patuxent River** empties into the west side of Chesapeake Bay 89.3 miles above the Virginia Capes. Commercial traffic consists chiefly of shellfish and shells, and petroleum products. Drafts of vessels using the river are mostly 7 feet or less and seldom exceed 12 feet.

(19) The river has natural depths of 25 to 30 feet in the approach, 30 to over 100 feet for 16 miles upstream, thence 23 feet to the Benedict highway bridge 19 miles above the mouth, thence 10 feet for 12 miles to within 2 miles of Nottingham, thence 6 feet for 5 miles, and thence 3 feet to Hills Bridge, 40 miles above the mouth. The channel is not difficult to follow as far as the Benedict bridge, and the principal shoals are marked by lights and daybeacons; the channel above the bridge is narrow in places and is marked for about another 2.5 miles.

(20) Anchorage can be had off the mouth of Patuxent River; shelter from westerly winds is found in depths of 20 to 30 feet close to shore on the north side of the approach. Shelter from easterly winds is found in depths of 30 to 50 feet in the channel about 1.5 miles above the entrance.

(21) Bottom in Patuxent River channel is mostly soft as far as the Benedict highway bridge, and vessels can anchor where convenient. Small vessels anchor in the creeks back of Solomons Island, but there is little swinging room. St. Leonard Creek is a good small-vessel anchorage in any weather.

(22) The current velocity is 0.4 knot in the entrance to Patuxent River off Drum Point. Ice closes the river to near the mouth in severe winters.

(23) Marine supplies and complete hull and machinery repairs are available along the Patuxent River. Principal locations are in the creeks behind Solomons Island, i.e., Back Creek and Mill Creek. Facilities are also available in Town Creek, Cuckold Creek, Island Creek, and at Benedict.

(24) Patuxent River empties into the head of the bight between Cedar Point and **Cove Point,** 5 miles to the northward. **Cove Point Light** (38°23'11"N., 76°22'54"W.), 45 feet above the water, is shown from a white tower on the point. The light is 1 mile west of a point on the bay ship channel 92.6 miles above the Capes. The high bluffs on **Little Cove Point,** 1.5 miles to the southward, are prominent.

(25) The entrance to Patuxent River is between **Drum Point** and **Fishing Point,** 0.9 mile to the southward. The shoals that extend off Fishing Point and **Hog Point,** 1 mile to the east-northeastward, are marked at their outer ends by lights. A fish haven, marked by buoys, is about 1 mile east-southeastward of Light 3. A light is just off Drum Point.

(26) **Mileages** on Patuxent River, shown as Mile 8W, 11E, etc., are the nautical miles above the midchannel point on a line drawn between Drum and Fishing Points. The letters N, S, E, and W following the numerals denote by compass points the side of the river where each feature is located.

(27) The **Patuxent River Naval Air Station** is along the south side of the entrance. The inclosed seaplane basins, East Patuxent Basin at Mile 0.8S, and West Patuxent Basin at Mile 1.35S have general depths of 9 to 4 feet, and 15 to 7 feet, respectively. Lights mark the entrance points to West Patuxent Basin. A **restricted area** off the air station begins about 2.4 miles south of Cedar Point and extends north to the mouth of Patuxent River, thence upstream for about 2.5 miles. (See **334.180,** chapter 2, for limits and regulations.)

(28) **Solomons Island,** Mile 1.8N, is joined to the mainland on the northwest by a causeway. The shoal that extends 500 yards southward from **Sandy Point,** at the south end of the island, is marked at its outer end by a light. **Solomons,** is the village on the island. The pier of the **Chesapeake Biological Laboratory** on the east side of the island has depths of 8 feet at the outer end and is marked by a private light.

(29) **Back Creek** and **Mill Creek** have a common entrance between Solomons Island and the mainland 200 yards to the north-northeastward. The marked main approach, between the island and the shallow middle ground to the eastward, has depths of 20 to 25 feet. The second marked approach, between the middle ground and the mainland to the northward, has depths of 12 feet.

(30) The two creeks separate just above the entrance. Mill Creek goes eastward of a shallow spit with a small islet at the southern end, and Back Creek goes westward; the spit and the islet are marked by lights.

(31) There are many small-craft facilities in Back Creek, Mill Creek, and along the northern side of Solomons Island. Lifts to 50 tons, a synchro-lift and a marine railway are available for complete repairs. Complete hull and machinery services, gasoline, diesel fuel, and pump-out station services are available.

(32) The Back Creek cove between the islet and the inner side of Solomons has general depths of 15 feet and is used as an anchorage by many yachts and fishing boats.

(33) Back Creek has depths of 12 feet for 0.7 mile above the cove, thence 10 to 6 feet for another 0.5 mile.

(34) **Mill Creek** has depths of 16 to 12 feet for 1.2 miles, thence 10 to 4 feet for another mile. Two submerged wrecks, reported covered 9 feet, are along the east side of the channel, about 0.5 mile above the mouth. Midchannel courses will safely pass the wrecks.

(35) **Town Point** is at Mile 2.9S. A shoal with a daybeacon at its outer end extends about 175 yards east of Town Point. **Town Creek,** on the southwest side of the low point, is used by fishing and oyster boats, and recreational craft. The creek, marked at the entrance by a light, is entered about 0.5 mile south-southwestward of Town Point. The entrance light also marks the outer end of a shoal that extends southward from the northern entrance point. In 2004-2005, depths of 2 to 12 feet were reported in the creek. Submerged wrecks are reported in the southwestern arm of the creek. Several small-craft facilities are on Town Creek.

(36) State Route 4 fixed highway bridge with a clearance of 30 feet at the west span and 35 feet at the east span crosses Town Creek about 0.3 mile above the entrance light. An overhead power cable with a clearance of 55 feet crosses the north arm of the creek about 0.45 mile above the entrance light.

(37) **Thomas Johnson Memorial (State Route 4) Highway Bridge**, a fixed bridge with a clearance of 140 feet crosses Patuxent River between Town Point and the north shore. The area in the immediate vicinity of the bridge is subject to unpredictable and sudden changes in wind conditions. Mariners under sail should exercise caution while navigating in the area.

(38) **Point Patience** is at Mile 3.9N; a light marks the west side of a shoal extending southward of the point. The current is reported to be especially strong within 25 yards of the light. The long Government piers on the east and west sides of the point have depths of 20 feet or more at their outer ends. (See **334.180,** chapter 2, for limits and regulations of the **restricted area** in the vicinity of these piers.)

(39) **Cuckold Creek** and **Mill Creek** (not to be confused with Mill Creek near Solomons Island) have a common entrance at Mile 4.7W. A daybeacon marks the outer end of the shoal that extends 0.4 mile southeastward from the point on the north side of the entrance, and daybeacons mark the entrance channel. The channel entrance is marked on the south side by a light. Gasoline and some supplies are available at **Clarks Wharf,** on the peninsula between the two creeks. Depths at the fuel pier are about 6 feet.

(40) Cuckold Creek, which extends northwestward from the entrance, has depths of 15 to 11 feet for 1 mile, thence 10 to 4 feet into the several arms. Three marinas are on the south side of the creek 0.6 mile, 0.8 mile, and 0.9 mile above the entrance, respectively. Gasoline, diesel fuel, and some supplies are available. Hull and engine repairs can be made; marine railway, 60 feet; lift, 10 tons.

(41) **Hellen Creek** enters Patuxent River at Mile 5.3E. In 1990, the reported controlling depth was 7 feet across the bar at the entrance; thence in 1980, depths of 5 feet were reported available for 1 mile into the creek; the deeper water favors the east side of the entrance. The creek is used principally as a small-boat harbor.

(42) **St. Leonard Creek**, Mile 7E, has depths of 15 to 10 feet for 2 miles, then shoals gradually to 1 foot at the head, 3.5 miles above the entrance. Safe anchorage in any weather is available in depths of 15 to 21 feet, 0.5 mile above the entrance. An overhead power cable with a reported clearance of 50 feet crosses the creek about 3.4 miles above the mouth. Gasoline and diesel fuel are available at a marina on the east side, 2 miles above the mouth. The shoal that extends 0.4 mile southward from **Petersons Point,** on the northwest side of the entrance, is marked at its outer end.

(43) **Broomes Island,** which is not an island but a mainland peninsula, is at Mile 9.5N. A light marks the limit of the shoal area that extends 0.2 mile southward of the peninsula.

(44) **Island Creek**, which empties into Patuxent River along the east side of Broomes Island, has depths of 8 to 10 feet for 1 mile, but there are unmarked shoals, particularly along the west side of the entrance; a light marks the east side of the entrance.

(45) The village of **Broomes Island** is on the west side of Island Creek about 1 mile from the outer end of the peninsula. Gasoline and some supplies are available at the crab and oyster piers.

(46) **Nan Cove**, on the west side of Broomes Island, is entered by a unmarked dredged channel which leads to a turning basin in the upper end of the east arm. In 2010, the midchannel controlling depth was 1.8 feet in the channel and 4 feet in the basin.

(47) A private channel, marked at the entrance by a private light, leads to a marina at the entrance to **Cat Creek** at Mile 12.6 W. In 1997, the channel had a reported depth of 5 feet. Gasoline, diesel fuel, some supplies, berths, a sewage pump-out station, and a 10-ton lift are available. Minor repairs can be made.

(48) **Battle Creek**, Mile 13.2E, has depths of 10 to 7 feet for 1.5 miles. Private daybeacons mark the channel through the shoals just above the entrance. A shoal which extends 0.3 mile southwestward from the point on the east side of the entrance is marked at its outer end by a light.

(49) The highway bridge over Patuxent River at Mile 18.8, from **Town Point** on the west side to **Hallowing Point** on the east side, has a 49-foot swing span with a clearance of 16 feet. (See **117.1 through 117.59 and 117.567,** chapter 2, for drawbridge regulations.)

(50) **Benedict**, a village just below the west end of the highway bridge, is the head of commercial navigation on Patuxent River. A marina at the south end of Benedict

can provide gasoline, berths, and some supplies. Minor repairs can be made; marine railway, 32 feet.

(51) Navigation on Patuxent River above Benedict is difficult because of the numerous fishtraps and stakes.

(52) Overhead power cables with a clearance of 60 feet over the main channel cross Patuxent River at Mile 20.9. The supporting towers are marked by private lights.

(53) An overhead power cable across Patuxent River at Mile 25.5, a mile above **Holland Cliff**, has a clearance of 53 feet.

(54) **Lower Marlboro** is a village at Mile 28.3E. The State landing has depths of 12 feet at the face.

(55) **Nottingham**, a village at Mile 32.8W, has a landing with depths of 13 feet at the face. In 1980, a draft of 5 feet could be carried with local knowledge to the Maryland Route 4 fixed highway bridge at Upper Marlboro, about 10 miles above Nottingham.

Offshore Terminal

(56) On the west side of Chesapeake Bay north of Cove Point is a liquefied natural gas unloading terminal of the Dominion Cove Point LNG, LP., The offshore unloading platform, 2,470 feet long with dolphins, has reported depths of 40 feet alongside. The platform has a deck height of 40 feet and provides berthing space for two LNG tank vessels. The northern berth has depths of 40 feet, but shoaling to 34 feet has been noted at the southern berth. The platform marked by private lights, is connected to shoreside facilities by a submerged tunnel. A **safety zone** is in the vicinity of the LNG terminal. (See **165.1 through 165.7, 165.20 through 165.25, and 165.502,** chapter 2, for limits and regulations.)

(57) **Flag Harbor,** on the west side of Chesapeake Bay 6.3 miles northwest of Cove Point, had a reported depth of 4 feet in the entrance channel in 2008; thence in 1998-2004, 7 feet in the small-boat basin. The 600-foot stone jetties on either side of the entrance are almost covered at high water and marked at their ends by private lights.

Chart 12266

(58) **Plum Point Creek** (38°36.9'N., 76°30.7'W.) empties into the west side of Chesapeake Bay 15 miles north-northwest of Cove Point. In 1997, depths of 4.5 feet were reported in the entrance to the creek and in the small-boat basin. A marina on the north side of the creek can provide some berths, gasoline, some supplies, and a sewage pump-out station.

(59) Overhead telephone and power cables with a clearance of 52 feet cross the creek 0.1 mile above the mouth.

(60) The **danger zone** of the **Naval Research Laboratory** firing range fans out from a point near **Randle Cliff Beach** (38°38.5'N., 76°31.7'W.), 18 miles northward of Cove Point. (See **334.170,** chapter 2, for limits and regulations.) The laboratory towers are prominent.

(61) **Chesapeake Beach** (38°41.8'N., 76°32.0'W.) is a resort and fishing center on the western shore of

Chesapeake Bay 19.6 miles northward of Cove Point. **Fishing Creek,** on the north side of the resort, is entered by a dredged channel which leads from the bay through jetties to an anchorage basin in the creek. The channel is marked by a lighted range and other aids. In 2011, the controlling depth was 3 feet at midchannel, thence depths of 3 to 4 feet were available in the basin. The fixed highway bridge 0.3 mile above the jetties has a width of 36 feet and a clearance of 10 feet.

Small-craft facilities

(62) Small-craft facilities, on the south side of the creek at Chesapeake Beach, have gasoline, diesel fuel, a pump-out station, water, ice, berths, and marine supplies. Hull and engine repairs can be made; marine railway, 50 feet; lift, 40 tons.

Chart 12270

(63) **Holland Point** (38°43.6'N., 76°31.7'W.), on the western shore of Chesapeake Bay 21.6 miles above Cove Point, has shoal areas extending in all directions; depths of 11 feet are 1.3 miles to the eastward and northeastward. Buoys mark the outer edges of the shoals. A fish haven, marked by buoys, is about 2.2 miles east-northeast of Holland Point.

(64) **Herring Bay**, between Holland Point and the marsh 3 miles to the northward, has general depths of 14 to 7 feet. **Long Bar**, with depths of 2 to 5 feet, extends from the north side of the bay to within 1 mile of Holland Point, and is marked at its south end by a light.

(65) **Herrington Harbour** (see also chart 12266), 0.6 mile westward of Holland Point, is entered through a jettied private channel from the south side of Herring Bay. The channel is marked by a **199°** lighted range and other private aids. In 2008, the channel had a reported controlling depth of 7 feet. The channel is very narrow and must be followed closely to carry the best water. A small-craft facility is on the east side of the harbor just inside the entrance. Gasoline, diesel fuel, water, berths with electricity, and repairs are available.

(66) **Rockhold Creek**, at the northwest corner of Herring Bay, has good shelter for small boats. A marked dredged channel leads from the bay to a turning basin just below the fixed highway bridge at **Deale**. In 2010, the controlling depth was 6.3 feet (7 feet at midchannel) to the head of the project. Depths are 2.1 to 3.0 feet for about 0.4 mile above the bridge. A light marks the outer end of the breakwater on the north side of the entrance. The fixed highway bridge 1 mile above the entrance has a width of 47 feet and a clearance of 14 feet. The fixed highway bridge 1.8 miles above the entrance has an opening 41 feet wide with a clearance of 10 feet.

(67) A 6 m.p.h. **speed limit** is enforced in Rockhold Creek.

(68) There are extensive small-craft facilities on both sides of Rockhold Creek below the first bridge, and on the east side of the creek between the first and second bridges.

No-Discharge Zone

(69) The State of Maryland, with the approval of the Environmental Protection Agency, has established a No-Discharge Zone (NDZ) in Herring Bay. The area covered includes tidal waters west of the following: beginning on Holland Point at or near 38°43'34.9"N., 76°31'37.3"W., then running in a northerly direction to a point at or near 38°46'33.0"N., 76°32'10.1"W., then running to a point on the north shore of Parkers Creek at or near 38°46'39.1"N., 76°32'10.8"W. (see chart 12270 for limits).

(70) Within the NDZ, discharge of sewage, whether treated or untreated, from all vessels is prohibited. Outside the NDZ, discharge of sewage is regulated by **40 CFR 140** (see chapter 2).

(71) **West River**, 8.5 miles above Holland Point, empties into the west side of Chesapeake Bay north of **Curtis Point** (38°51.1'N., 76°29.9'W.). A marked fish trap area is off the entrance. The river has depths of 14 to 7 feet for about 4 miles, then shoals gradually to less than 3 feet in the tributaries. The river channel approach is marked by lighted buoys, and by lights and daybeacons to **Galesville**, on the west side of the river 2.5 miles above the entrance light. A yacht club is on the east side of the river at **Avalon Shores**, opposite Galesville.

(72) Several small-craft facilities are at Galesville and close-by.

(73) **Parish Creek**, on the south side of West River 0.5 mile westward of Curtis Point, is entered by a marked dredged channel which leads to an anchorage basin, and thence to **Shady Side** at the head of the south fork. In 2010, the midchannel controlling depth was 8 feet to the anchorage basin, thence 5.9 feet in the basin, thence 4.3 feet in the channel in south fork. Depths of 4.3 to 5.5 feet were in the anchorage basin. A 6 m.p.h. **speed limit** is enforced.

Small-craft facilities

(74) Small-craft facilities on the north side of Parish Creek and at Shady Side can provide gasoline, diesel fuel, water, electricity, a pump-out facility, berths, and marine supplies. Hull and engine repairs can be made. Largest haul-out capabilities: marine railway, 35 feet; lift, 25 tons.

(75) **Rhode River** empties into the north side of West River 1.1 miles westward of West River Entrance Light 2. The river, marked at the entrance by a light, has depths of 11 to 9 feet for 2 miles. The critical shoals extending off the points are marked.

(76) **Cadle Creek**, on the east side of Rhode River 1 mile above the entrance light, has depths of 4 to 7 feet. The entrance to the creek is marked by daybeacons. **Mayo** is a town on the east side of the creek.

(77) **Bear Neck Creek**, on the north side of Rhode River 1.5 miles above the entrance light, has depths of 9 to 5 feet for 1 mile. The entrance is marked by daybeacons.

(78) Small-craft facilities are on Cadle Creek and Bear Neck Creek.

(79) An 000°–180° **measured course**, 0.5 mile long, is about 1.4 miles eastward of Curtis Point. The course is marked at each end by an orange and white mine-type buoy. These private aids are maintained from May to November.

(80) **South River**, just north of West River, has channel depths of 14 feet or more to the second bridge, 6 miles above the mouth, then shoals gradually to 2 feet at the bridge near the head, 8.5 miles above the mouth. The river channel is marked to a point about 0.3 mile below the second bridge. Several of the creeks that flow into the river have good depths and are used extensively by local yachts and motorboats. Most of these tributaries are reported to provide good anchorage. There are commercial facilities above and below the first bridge.

(81) **Minimum wake areas** and a 6-knot **speed limit** are enforced in many parts of the river and in most of the coves and creeks that flow into the river. These areas are marked by regulatory markers.

(82) The entrance to South River is between **Saunders Point** and **Thomas Point,** 1.8 miles to the northeastward. **Thomas Point Shoal Light** (38°53'56"N., 76°26'09"W.), 43 feet above the water, is shown from a white hexagonal tower on piles, in depths of 5 feet near the outer end of the shoal 1.2 miles east-southeastward of the point; a sound signal is at the light. The light is 1.5 miles due west of a point on the bay ship channel 124.2 miles above the Capes.

(83) **Selby Bay**, on the southwest side of South River 1.7 miles above the mouth, has general depths of 8 to 11 feet. The south end of the bay is shallow. The channel to **Selby Beach**, on the northwest side of the bay, is marked by lights and a daybeacon. **Ramsay Lake** has a narrow entrance from the south end of Selby Bay; in 1998, a depth of 5.5 feet was reported in the entrance, thence 7 to 8 feet in the lake. The fixed highway bridge over the Selby Bay entrance to the lake has a width of 22 feet and a clearance of 14 feet.

(84) Small-craft facilities are on the south and west sides of Selby Bay and in Ramsey Lake.

(85) **Brewer Creek**, on the southwest side of South River 3 miles above the mouth, has depths of 12 feet in the entrance, and 4.5 feet reported through the narrows 0.2 mile above the entrance. The narrows connect Brewer Creek with **Pocahontas Creek** to the southward. Gasoline, water, berths, and limited marine supplies are available in Pocahontas Creek; hull and engine repairs can be made.

(86) **Glebe Bay**, on the southwest side of South River 3.5 miles above the mouth, has general depths of 13 to 15 feet. Care should be taken to avoid the 2-foot shoal near midbay and the 2-foot shoals along the northwest and

southeast sides of the bay. **Glebe Creek,** with depths of 11 to 7 feet for about 0.4 mile, empties into the southwest side of the bay. Gasoline, water, and berths are available in the cove on the north side of the bay just inside the entrance.

(87) State Route 2 fixed highway bridge at **Edgewater**, 5 miles above the mouth of South River has a clearance of 53 feet.

(88) **Gingerville Creek**, on the north side of South River, extends along the westerly side of Edgeater. The creek has depths of 6 feet for 0.7 mile, nearly to the head.

Small-craft facilities

(89) There are small-craft facilities at Edgewater, and in Warehouse Creek, on the south side of the river opposite Edgewater. (See the small-craft facilities tabulation on chart 12271 for services and supplies available.)

(90) **Beards Creek**, on the south side of South River 5.7 miles above the mouth, has depths of 15 to 8 feet for 1 mile; a shallow spit extends halfway across the entrance from the point on the northwest side. In 1978, a submerged piling was reported in Beards Creek in about 38°56.6'N., 76°34.6'W. The highway bridge at **Riva,** 6 miles above the mouth of South River, has a fixed span with a clearance of 25 feet.

(91) **Fishing Creek**, immediately northward of the entrance to South River, has depths of 7 to 4 feet. A privately dredged channel leads from Chesapeake Bay to the **Annapolis Coast Guard Station** wharf on the northwest side of the creek. In 2006, the marked channel had a controlling depth of 7.2 feet

Chart 12282

(92) **Severn River**, the approach to Annapolis, empties into Chesapeake Bay 127 miles above the Virginia Capes. Commercial traffic consists of tour boats, fishing and shell fishing craft. Naval craft and many pleasure craft use the river.

(93) The river has main channel depths of 17 feet or more from the entrance to Annapolis, thence 15 feet or more for 8 miles, thence 11 to 7 feet for 2 miles to within 1 mile of the head. The channel is well marked as far as Annapolis, above which it is marked at the critical points and is easy to follow.

Tides and currents

(94) The tide is greatly influenced by winds. The current velocity seldom exceeds 0.5 knot. Ice rarely interferes with navigation except in severe winters, and then only for a short time.

(95) The Severn River Comprehensive Vessel Management Plan regulations established maximum speed limits for day and night operation of boats and minimum wake speed limits for the Severn River and its tributaries. These speed limits vary and are marked by white and orange regulatory markers. For more information contact Maryland Department of Natural Resources, Marine Police, Tawes State Office Building, Annapolis, MD 21401; telephone 410-260-8880.

Chart 12283

(96) The entrance to Severn River is between **Tolly Point** and Greenbury Point, 2 miles to the northward. **Tolly Point Shoal**, with depths of 4 to 5 feet, extends 1 mile east-southeastward from the point; it is marked at its outer end by a light.

(97) The entrance to **Lake Ogleton** is on the southwest side of Severn River 0.8 mile above Tolly Point. The lake has depths of 5 to 9 feet, but the narrow entrance, marked by lights and daybeacon, in 1998, had a reported centerline controlling depth of 6 feet. The small private wharves along the shore of the lake are used mostly for mooring pleasure craft.

(98) **Greenbury Point** is on the north side of the entrance to Severn River. Three towers on the point are prominent up and down the bay; each tower has a flashing red light on top and fixed red lights on the sides. A daybeacon marks the shoal extending 0.4 mile south of the point.

(99) A **naval deep-draft anchorage** is southeast of Greenbury Point, and several smaller **naval anchorages** and **prohibited anchorages** are west and northwest of the point. (See **110.1 and 110.159,** chapter 2, for limits and regulations.)

(100) The entrance to **Carr Creek** is northwest of Greenbury Point. The creek has depths of 9 feet over the unmarked entrance bar and deeper water through a narrow channel inside. In 1998, shoaling was reported in about 38°58'59"N., 76°27'27"W. A naval rifle range is on the west side of the entrance to the creek. Mariners are warned to keep out of the creek when the red flag is flying from **Carr Point** or the next point southward.

(101) A detached breakwater is about 50 yards south of a pier that extends southeastward from the point south of Carr Point; another detached breakwater is about 125 yards southeastward of the same pier.

(102) **Back Creek**, on the southwest side of Severn River 0.7 mile above the mouth, has depths of 7 to 9 feet for most of its 1-mile length. A light marks the outer end of the breakwater on the south side of the entrance, and lights and daybeacons mark the narrow entrance channel. In 1998, shoaling was reported on the north side of the entrance in about 38°58.1'N., 76°28.3'W. The creek is used by fishing boats and pleasure craft. Berthing and repair facilities are located on the north side of the creek at **Eastport**, and on the south side of the creek. Diesel fuel and gasoline are available on the south side of the creek.

(103) **Spa Creek**, on the southwest side of Severn River 1.4 miles above the mouth, has depths of 12 feet in the entrance channel, thence 12 feet to the highway bridge, and thence 10 to 6 feet for 0.7 mile to near the head.

Annapolis, Maryland
Image courtesy of Waterway Images (2004)

Drafts of vessels using the creek are mostly 10 feet or less. The Spa Creek highway bridge, about 0.4 mile above the entrance, has a 40-foot bascule span with a clearance of 15 feet. The bridgetender monitors VHF-FM channel 16 (156.80 MHz) and works on channels 13, and 68. The bridgetender can be reached by phone (410) 974-3840. (See **117.1 through 117.59 and 117.571**, chapter 2, for drawbridge regulations.) Gasoline, diesel fuel, berths, electricity, pump-out station, water and ice are available on the north side of the creek just east of the bridge.

(104) **Annapolis**, the capital of Maryland, is on the north side of Spa Creek. The **U.S. Naval Academy** occupies the entire northeastern part of the city between Spa Creek and College Creek, 0.7 mile to the northwestward.

Quarantine, customs, immigration, and agricultural quarantine

(105) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(106) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(107) Annapolis is a **customs port of entry.**

Harbor Regulations

(108) The **harbormaster** has an office on the north side of Market Slip and enforces city regulations for the harbor. The harbormaster also controls municipal rental berths and mooring available in the harbor. A **speed limit** of 6 m.p.h. is enforced.

(109) The Naval Academy **Santee Basin**, on the Severn River side of Annapolis has reported depths of 15 feet. The basin and seawall are within a **restricted area.** (See **334.160,** chapter 2, for limits and regulations.)

(110) Spa Creek waterfront has depths of 4 to 10 feet reported alongside the bulkhead and wharves almost to **Market Slip,** 250 yards below the north end of the Spa Creek highway bridge. Market Slip is 250 yards long and 40 yards wide, with depths of 8 to 10 feet; the slip is open to the public and is used extensively by small craft.

(111) Extensive marine facilities are on both sides of Spa Creek above and below the bridge. Most of the boatyards are on the south, or Eastport, side of Spa Creek.

(112) The privately owned **David Taylor Research Center** extends from Carr Creek along the eastern shore of Severn River for about 1 mile to **Ferry Point.** The small-boat basin, 0.4 mile westward of Carr Creek, is a **naval restricted area**. (See **334.155**, chapter 2, for limits and regulations.)

(113) **College (Dorseys) Creek**, on the southwest side of Severn River 2.1 miles above the mouth, has depths of 11 to 8 feet for most of its 1-mile length; the best water in the entrance is along the south side. A fixed

Annapolis, Maryland
Image courtesy of Waterway Images (2004)

footbridge, two drawbridges, one fixed bridge, and an overhead pipeline cross the creek from Annapolis on the southeast bank to **West Annapolis** on the northwest bank. The drawspans are secured in a fixed position. (See **117.555,** chapter 2, for drawbridge regulations.) The bridges and overhead pipeline have a minimum width of 40 feet and clearance of 5 feet.

(114) The highway bridge, 2.4 miles above the mouth of Severn River has a fixed span with a clearance of 75 feet. A large fishing pier is above and adjacent to the highway bridge on the east of the Severn River.

Chart 12282

(115) **Weems Creek** (39°00.0'N., 76°30.1'W.), on the southwest side of Severn River 3.2 miles above the mouth, has depths of 13 feet for 0.8 mile, thence 11 to 7 feet for 0.3 mile to near the head. A shoal extends 300 yards eastward from the point on the north side of the entrance, and is marked by a buoy. The highway bridge 0.5 mile above the entrance has a swing span with a width of 28 feet and a clearance of 8 feet. (See **117.1** through **117.59** and **117.577**, chapter 2, for drawbridge regulations.) The fixed highway bridge about 500 feet above the drawbridge has a clearance of 28 feet. A private special purpose buoy at the mouth of Weems Creek marks a **speed** controlled area.

(116) U.S. Route 50/301 fixed highway bridge over Severn River, 3.5 miles above the mouth, has a clearance of 80 feet at the center span.

(117) **Round Bay**, an expansion of Severn River beginning 6 miles above the mouth and continuing for 2 miles, has depths of 17 to 23 feet and is traveled extensively by motorboats. **Little Round Bay**, west of Round Bay, has depths of 17 to 19 feet, and is marked by daybeacons. Depths of 4 feet can be carried to a boatyard in **Browns Cove**, behind **St. Helena Island.** Berths, electricity, gasoline, diesel fuel, water, ice, launching ramp, pump-out station, storage and some marine supplies can be obtained. A 35-ton lift is available for hull and engine repairs.

(118) **Forked Creek**, on the north side of Severn River 9 miles above the mouth, has depths of 16 to 10 feet for most of its 0.4 mile length. Marine services are on the creek with 4 to 6 feet available alongside. Berths, electricity, water, ice and a launching ramp are available. A marine railway can handle crafts to 50 feet; lift to 9 tons for hull and engine repairs.

(119) There is a small-boat basin on the east side of Severn River, 11 miles above the mouth. The controlling depth to the basin is about 3 feet.

William P. Lane, Jr. Memorial (Chesapeake Bay) Bridge, Maryland
Image courtesy of Waterway Images (2006)

Charts 12283, 12282

(120) **Whitehall Bay**, on the west side of Chesapeake Bay, is between Greenbury Point (38°58.5'N., 76°27.3'W.) and **Hackett Point,** 1.5 miles to the northeastward. The bay has general depths of 13 to 6 feet. The entrance channel is about 300 yards wide between **Whitehall Flats** on the west and **North Shoal** on the east, both with depths of 3 to 4 feet; a light marks the western limit of North Shoal. A lighthouse at **Sharps Point,** on the west side of the entrance to Whitehall Creek Entrance Light 2W, provides a well-marked approach to the channel between North Shoal and Whitehall Flats.

(121) **Mill Creek**, which empties into the northwest corner of Whitehall Bay, is entered through a privately dredged entrance channel marked by a light and daybeacons; in 1998, the reported controlling depth was 7 feet. The depths above the dredged channel are 7 to 14 feet for 1.5 miles to near the head of the creek. Gasoline is available at a pier 0.7 mile above the entrance. A marine railway, 1.3 miles above the entrance, can handle boats up to 40 feet. Gasoline and water are available just west of the railway.

(122) **Whitehall Creek**, which empties into the northeast corner of Whitehall Bay, has depths of 9 to 13 feet for 1.5 miles, then shoals gradually to 1-foot at the head 0.5 mile farther up. The narrow, crooked entrance channel is marked by lights and daybeacons. In 1998, shoaling to 6 feet was reported in the channel between daybeacons 4 and 5. A 35-ton lift is available on the east side of the creek, 1 mile above the mouth.

(123) **Meredith Creek**, in the northeast corner of Whitehall Bay just eastward of Whitehall Creek, has depths of about 2 feet in a very narrow entrance, thence 10 to 7 feet for 0.7 mile, then shoals gradually to 1 foot at the head, 0.6 mile farther up. Local knowledge is necessary to carry more than 2 feet through the entrance.

(124) A fish haven, marked by a buoy, is about 1 mile eastward of Hackett Point.

(125) The two spans of the **William P. Lane, Jr. Memorial (Chesapeake Bay Bridge) Bridge (U.S. Route 50/301)** (see also charts 12270, 12263), 130 miles above the Virginia Capes, are 3.7 miles long from shore to shore; the western end is 0.5 mile southwestward of Sandy Point, and the eastern, or Kent Island end, is 4 miles south-southwestward of Love Point. A privately marked channel leads to a marina and yacht club at the eastern end of the bridge. In 2004, the reported approach depth was 6 feet. Gasoline, diesel fuel, a pumpout station, electricity, water, ice, marine supplies, dry storage, a launching ramp, and hull, engine, and electronic repairs are available; lift to 70 tons.

(126) The suspension spans over **Chesapeake Channel** 1.4 miles from the western end of the bridge have a least width of 1,500 feet and a least clearance of 182 feet. Flashing red aerolights are mounted on top of the two suspension towers. Three fixed white lights are

mounted vertically at the center of Chesapeake Channel spans over fixed green range lights. Sound signals are mounted on the south and north sides of the bridge at the center of Chesapeake Channel spans.

(127) The fixed spans over **Eastern Channel** 1.2 miles from the eastern end of the bridge have a least width of 690 feet and a clearance of 58 feet. The center of the spans are marked by a range of two green lights. A sound signal is at the span center.

(128) Red lights mark the ends of the bridge piers, except those adjacent to Chesapeake Channel, between points 0.3 mile from the western end and 1 mile from the eastern end. Lighted buoys mark Chesapeake Channel on either side of the bridge. The abandoned Sandy Point-Matapeake Ferry Terminal is just south of the west end of the bridge.

(129) **Sandy Point State Park** is just north of the west end of the bridges. In 1998, the reported controlling depth was 5.5 feet in the State-maintained entrance channel and basin at **Mezick Ponds**. The channel and basin are privately marked by lights and daybeacons. **Slow no-wake signs** are posted in the entrance channel and in the basin. Gasoline, diesel fuel, water, ice, a pump-out station, and some marine supplies are available; overnight mooring is prohibited except in emergency.

(130) **Sandy Point Shoal Light** (39°00'57"N., 76°23'04"W.), 51 feet above the water, is shown from a red brick house with a white roof, on a brown cylindrical pier about 0.4 mile northeastward of Sandy Point. The light is about 0.5 mile west of a point on the bay ship channel 131.5 miles above the Capes.

(131) **Baltimore Light** (39°03'33"N., 76°23'56"W.), 52 feet above the water, is shown from a white, octagonal house on a brown cylindrical pier, in depths of 22 feet, 2.5 miles north of Sandy Point.

(132) **Magothy River** (see also chart 12278), on the west side of Chesapeake Bay 1.7 miles westward of Baltimore Light, has depths of 10 feet or more for 6 miles, thence 4 feet for 0.5 mile to within 0.2 mile of a fixed highway bridge. There are many excellent anchorages in the numerous tributaries, and the area is a favorite cruising ground for pleasure craft. The critical points along the lower half of the channel in Magothy River are marked.

(133) **Minimum wake areas** and a 6-knot **speed limit** are enforced in many parts of the river and in most of the coves and creeks that flow into the river. These areas are marked by regulatory markers.

(134) The entrance to Magothy River is between **Persimmon Point** and Mountain Point, 0.4 mile to the north-northeastward. **Mountain Point,** the southernmost extremity of **Gibson Island,** is a sandy spit making out from a high wooded bluff. The current velocity is 0.6 knot on the flood and 0.3 knot on the ebb in the entrance to Magothy River.

(135) **Deep Creek**, marked through the entrance, is on the south side of Magothy River 0.5 mile above the mouth. The creek has depths of 7 to 5 feet for 0.6 mile to near the head. Gasoline, diesel fuel, water, berths, and some marine supplies are available at marinas in the creek. Hull and engine repairs can be made; lift, 25 tons.

(136) **Sillery Bay**, on the north side of Magothy River along the west side of Gibson Island, has general depths of 8 to 13 feet. The bay is the approach to Magothy Narrows and the harbor on the north side of Gibson Island; the eastern shore of the island is connected with the mainland on the north by a causeway.

(137) The marked channel through **Magothy Narrows** has depths of about 10 feet, and there are depths of 9 to 10 feet in Inner Harbor. The Gibson Island Yacht Club has facilities in Inner Harbor.

(138) A marine service pier on the east side of the entrance to **Redhouse Cove,** at the west end of Inner Harbor, has reported depths of 7 feet at the outer end. The boatyard can haul out craft up to 50 feet for repairs.

(139) **Cornfield Creek,** which flows into the eastern end of Magothy Narrows, has depths of 7 feet nearly to its head. Gasoline, diesel fuel, water, berths, and some marine supplies are available just above the mouth.

(140) **Grays Creek**, in the northwest side of Sillery Bay, has depths of about 3 feet over the entrance bar through a narrow marked channel which leads to deeper water inside the creek. A marina just inside the north prong has berths with electricity, gasoline, diesel fuel, water, ice, a pump-out station, a 30-ton travel lift, and some marine supplies. Hull and engine repairs can be made.

(141) **Broad Creek**, marked by daybeacons off the entrance, is on the north side of Magothy River 2.5 miles above the mouth. The creek has depths of 9 feet or more to a marine in the upper end of the creek.

(142) **Blackhole Creek**, on the north side of Magothy River 3.5 miles above the mouth, has depths of 7 feet in a narrow marked entrance channel, and 5 or more feet almost to the head. A **special anchorage** is in the cove on the west side of Blackhole Creek 0.2 mile above the entrance. (See **110.1** and **110.72,** chapter 2, for limits and regulations.)

(143) **Mill Creek** and **Dividing Creek** have a common entrance on the south side of Magothy River, 3.8 miles above the mouth. Depths of 8 to 12 feet can be carried in both creeks for about 0.3 mile. A small-craft facility just inside Mill Creek has gasoline, water, berths, and marine supplies. Hull and engine repairs can be made; lift, 20 tons. An overhead power cable just inside the creek has a clearance of 54 feet.

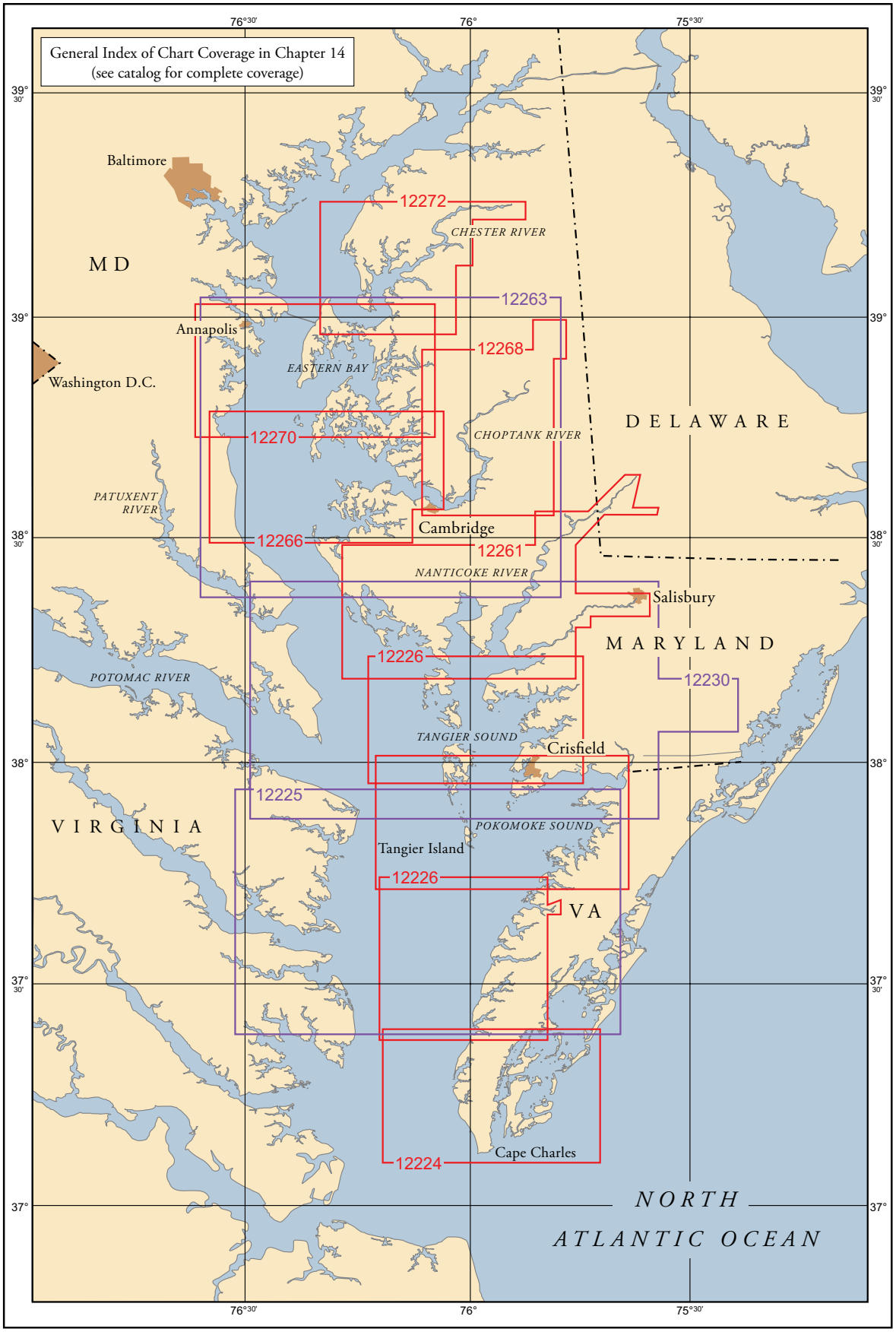
(144) **Cypress Creek** is on the southwest side of Magothy River 4 miles above the mouth. The creek is entered by a narrow, marked dredged channel. In 2009, the channel had a controlling depth of 5.3 feet. Depths of 9 feet are inside the creek, with gradual shoaling to the flats at the head. Hull and engine repairs can be made at a boatyard on the east side of the creek just inside the entrance. A 25-ton lift is available.

(145) Gasoline, water, and marine supplies are available on the southwest side of Magothy River, 5 miles above

the mouth. Repairs can be made; lift, 25 tons.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12230	Sharkfin Shoal Light, Chesapeake Bay	38°12'N/75°59'W	2.5	2.3	0.1
12230	Point Lookout	38°02'N/76°19'W	1.5	1.4	0.2
12230	Crisfield, Little Annemessex River	37°59'N/75°52'W	2.1	2.0	0.1
12233	Piney Point, Potomac River	38°08'N/76°32'W	1.6	1.5	0.1
12233	Kinsale, Potomac River	38°02'N/76°35'W	1.4	1.3	0.1
12263	St. Michaels, Miles River	38°47'N/76°13'W	1.9	1.7	0.3
12263	Kent Island Narrows, Eastern Bay	38º58'N/76°15'W	1.8	1.5	0.3
12263	Chesapeake Beach, Chesapeake Bay	38°41'N/76°32'W	1.5	1.2	0.2
12263	Cove Point	38º24'N/76°24'W	1.4	1.1	0.1
12263	Cambridge, Choptank River	38°34'N/76°04'W	2.0	1.8	0.2
12263	Annapolis, U.S. Naval Academy	38°59'N/76°29'W	1.4	1.2	0.2
12264	Broomes Island, Patuxent River	38°25'N/76°33'W	2.0	1.6	0.3
12264	Benedict, Patuxent River	38°31'N/76°40'W	2.4	2.0	0.4
12266	St. Michaels, San Domingo Creek	38°47'N/76°14'W	2.1	1.7	0.3
12270	Thomas Point Shoal Light, Chesapeake Bay	38°54'N/76°26'W	1.4	1.1	0.2
12273	Town Point Wharf, Elk River	39°30'N/75°55'W	2.7	2.4	0.2
12273	Havre de Grace, Susquehanna River	39°32'N/76°05'W	2.5	2.1	0.2
12273	Baltimore, Ft. McHenry	39°16'N/76°35'W	1.7	1.4	0.2
12282	Mountain Point, Magothy River	39°04'N/76°26'W	1.2	1.0	0.2
12284	Solomons Island, Patuxent River	38°19'N/76°27'W	1.5	1.3	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 November 2011


General Index of Chart Coverage in Chapter 14
(see catalog for complete coverage)
76°30'
76°
75°30'
39° 30'
39°
38° 30'
38°
37° 30'
37°
Baltimore
M D
Annapolis
Washington D.C.
EASTERN BAY
CHESTER RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
POTOMAC RIVER
TANGIER SOUND
POKOMOKE SOUND
Cambridge
Salisbury
Crisfield
Tangier Island
Cape Charles
D E L A W A R E
M A R Y L A N D
V I R G I N I A
V A
N O R T H
A T L A N T I C O C E A N
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Chesapeake Bay, Eastern Shore

(1) This chapter describes the Eastern Shore of Chesapeake Bay from Cape Charles to Swan Point, about 6 miles northward of the entrance to Chester River, and several bodies of water and their tributaries that empty into this part of the bay. Included are Pocomoke Sound, Pocomoke River, Tangier Sound, Wicomico River, Nanticoke River, Little Choptank River, Choptank River, Eastern Bay, and Chester River, and the off-lying islands of Tangier, Smith, Hooper, and Tilghman.

(2) Also described are the ports of Cape Charles, Pocomoke City, Tangier, Crisfield, Salisbury, Easton, Cambridge, St. Michaels, and several smaller ports and landings.

COLREGS Demarcation Lines

(3) The lines established for Chesapeake Bay are described in **80.510,** chapter 2.

(4) During the ice navigation season, the Maryland waters of Chesapeake Bay described in this chapter are a **regulated navigation area.** (See **165.503,** chapter 2, for limits and regulations.)

Charts 12221, 12225, 12230, 12263, 12273

(5) The Eastern Shore of Chesapeake Bay, from Cape Charles to Chester River, is mostly low and has few prominent natural features. The mainland and the islands are subject to erosion, and many of the islands and points have completely washed away. **Fishtrap** limits are shown on the charts and usually are marked by black and white horizontal-banded buoys. In the tributaries of Pocomoke Sound, **ice** sufficient to interfere with the navigation of small vessels may be encountered at any time from January through March. The ice from Pocomoke Sound does not interfere with the larger vessels in the bay, but the smaller oyster and fishing boats frequently are held up and sometimes require assistance, especially in Kedges and Hooper Straits.

Charts 12224

(6) **Wise Poin**t (37°07.0'N., 75°58.3'W.), the mainland tip of Cape Charles, is included in chapter 9, which also describes Fishermans Island, Cape Charles Light on Smith Island, and the Atlantic entrance to Chesapeake Bay.

(7) **Kiptopeke Beach**, 3.2 miles northward of Wise Point, is the site of a former ferry terminal. The offshore breakwaters are obsolete ships filled with sand and sunk end-to-end. Just northward of the abandoned terminal is **Butlers Bluff,** which has steep bare faces conspicuous from the bay.

(8) **Old Plantation Creek**, 7 miles northward of Wise Point, has depths of about a foot. Many of the bars and middle grounds are marked by discolored water, and the channel usually is marked by bush stakes, but it is narrow and difficult to navigate without local knowledge. The opening in the thick woods at the mouth is visible from outside. No supplies are available along the creek.

(9) **Cape Charles Harbor**, 9 miles northward of Wise Point, is a dredged basin on the south side of the town of **Cape Charles**. A well-marked dredged channel leads to the harbor between sand flats on the south and a stone jetty on the north. Two small dredged basins are eastward of the main harbor basin. The northerly basin is known as the Harbor of Refuge, and the southerly basin as Mud Creek Basin. (See Notice to Mariners and latest edition of charts for controlling depths.) The current velocity is about 1.3 knots 0.5 mile southwest of the Cape Charles City Entrance Light 1.

(10) **Cape Charles Coast Guard Station** is on the spit between Mud Creek and the Harbor of Refuge.

(11) The mean range of tide is 2.4 feet at Cape Charles. The tidal currents set across the entrance to and across the southwest section of the dredged channel, but farther north they follow the general direction of the axis. The channel is exposed to westerly winds, but is partially protected by the flats to the westward, and seldom is too rough for motorboats. However, during severe W weather heavy surges may occur in the harbor. Ice may hinder navigation in the harbor during severe winters. Because of the limited space in the channel and harbor, the larger vessels and tows occasionally are somewhat of a hazard to small boats.

(12) Cape Charles is a **customs port of entry.**

(13) Cape Charles Harbor is a terminus of the Bay Coast Railroad. The railroad operates floats to Little Creek. Floats are usually brought into the harbor in the late afternoon, although there are also occasional early morning arrivals. Due to the limited maneuvering room in the channel and the harbor, larger vessels and tows are sometimes a hazard to small craft. The tugs that handle the floats monitor VHF-FM channels 13 and 16.

(14) There is public access to the bulkheads and slips at the eastern end of the harbor. Anchoring is forbidden in any part of the harbor or the basins. A "no-wake" **speed limit** is enforced. A **harbormaster** enforces harbor regulations, and a **dockmaster** supervises docking at

the municipal facilities. Gasoline, diesel fuel, and water are available. Some marine supplies may be obtained in town.

(15) **Cherrystone Channel** is a passage inside Old Plantation Flats that leads from deep water 2 miles south-southeastward of Old Plantation Flats Light northward to Kings Creek and Cherrystone Inlet. The route follows part of the dredged channel to Cape Charles Harbor for about 1 mile. That part of Cherrystone Channel southward of the dredged channel to Cape Charles Harbor is unmarked and little used. Cherrystone Channel above Cape Charles Harbor is marked by lights and daybeacons to the vicinity of **Sandy Island.** This part of the channel has depths of about 10 feet, but is narrow in places, and local knowledge is required to carry the best water. The recommended southerly approach to Kings Creek and Cherrystone Inlet is via the marked dredged channel to Cape Charles Harbor, which was discussed earlier in this chapter.

(16) **Kings Creek**, about 1 mile northward of Cape Charles Harbor and eastward of Sandy Island, has depths of 3.5 feet for 1 mile upstream. The shoal that extends out from the north side of the entrance bares at low water; a light marks the entrance. The creek is used extensively by fishermen and pleasure craft. Gasoline, diesel fuel, berths, and marine supplies are available at a marina just inside the entrance.

(17) **Cherrystone Inlet**, which extends northeastward from Sandy Island, has depths of 5 feet for 2 miles, thence 4 to 2 feet to the upper end. The channel in the inlet sometimes is marked by bush stakes, but it is narrow and difficult to navigate without local knowledge.

(18) Boats bound for Kings Creek or Cherrystone Inlet can leave the Cape Charles Harbor channel west of the jetty on the north side of the harbor entrance and proceed northward in marked Cherrystone Channel. Depths of 2 to 4 feet over the flats that extend southward for 2 miles along the west side of Cherrystone Channel from Sandy Island limit the draft that can be carried over that area from westward and northwestward. The area between Sandy Island and **Wescoat Point,** 0.3 mile to the northward, bares at low water.

(19) A **fish haven**, marked by private buoys, is about 1.8 miles northwest of Wescoat Point.

Chart 12226

(20) **Hungars Creek** and **Mattawoman Creek** have a common outlet (37°23.7'N., 75°59.4'W.) to the bay 8 miles northward of Cape Charles Harbor (see chart 12224). Hungars Creek is marked by lights, daybeacons, and bush stakes, and Mattawoman Creek by bush stakes. Both creeks are difficult to follow without local knowledge.

(21) Hungars Creek extends about 4 miles in a northeasterly direction to **Bridgetown.** Depths of 3 feet are available in the narrow entrance channel, marked by lights, thence decreasing to 1 foot to Bridgetown.

(22) Mattawoman Creek extends about 2 miles in a southeasterly direction and has several branches at its head. The best approach is to follow the lights at the entrance of Hungars Creek to the light off **Wilsonia Neck,** then follow the bush stakes southeastward and southward along the shore. The controlling depth is about a foot to the head of navigation. The overhead power cables near the head of the creek have a minimum clearance of 33 feet.

(23) A **danger zone** for naval firing begins about 12 miles north-northwestward of Cape Charles Harbor and extends northward to Tangier Sound Light, just south of **Tangier Island**. (**See 334.220**, chapter 2, for limits and regulations.)

(24) **Nassawadox Creek,** 13 miles northward of Cape Charles Harbor and about 5 miles northward of the entrance to Hungars Creek and Mattawoman Creek, extends about 5 miles to the northeast. The controlling depth across the bar is about 1 foot, thence 4 feet for 4 miles upstream. The channel is marked by a light and daybeacons for about 1.6 miles, but local knowledge is necessary to carry the best water. An overhead power cable with a clearance of 38 feet crosses the creek about 3 miles above the mouth. The flats on either side of the entrance are nearly bare at low water, are covered by marsh grass in the summer, and are usually well defined. **Bayford,** on the southeast side of the creek 1.5 miles above the mouth, has a wharf. The several creeks that branch off from Nassawadox Creek have depths of 3 feet or less. A marine railway at **The Saltworks,** on the north side of the creek, can handle boats up to 35 feet for hull and engine repairs.

(25) **Occohannock Creek** (37°33.0'N., 75°56.3'W.) flows into Chesapeake Bay from eastward 18 miles northward of Cape Charles Harbor; a fixed bridge 5.4 miles above the entrance is the head of navigation. The channel over the bar to the entrance of the creek has a Federal project depth of 9 feet and a width of 100 feet. (See Local Notice to Mariners and latest edition of chart for controlling depths.) Inside the creek, depths of about 5 feet can be carried to **Morley Wharf,** on the south side 4 miles above the entrance, with lesser depths to the fixed bridge.

(26) The channel over the bar of Occohannock Creek is marked by lights and daybeacons, but it is narrow and tortuous, and difficult to navigate without local knowledge. The channel within the creek also is narrow, but the ends of the shoals are marked by daybeacons all the way to Morley Wharf. A public pier and boat ramp are at Morley Wharf. Gasoline, hull and engine repairs, a 25-ton travel lift, and limited marine supplies are available at **Davis Wharf**, on the north side of the creek.

(27) **Nandua Creek**, 23 miles northward of Cape Charles Harbor and about 5 miles northward of Occohannock Creek, is entered through a dredged channel which leads across the bar to the mouth of the creek. In 2011, the controlling depth was 2 feet in the dredged channel

to the mouth of the creek; thence in 2007, 2.5 feet was reported in the creek channel to the wharf in ruins at the settlement of **Nandua**, 3 miles above the mouth. The bar channel, marked by lights and daybeacons, is narrow and shifting; local knowledge is required to carry the best water. The shoals at the entrance usually can be distinguished by the difference in color of the water, except in rough weather when the water is clouded. Daybeacons mark the critical parts of the channel to Nandua.

(28) **Back Creek,** on the north side of Nandua Creek, 1 mile above the mouth, has depths of 3 feet to the village of **Hacksneck.**

(29) **Pungoteague Creek,** 3 miles northeastward of Nandua Creek, has depths of 8 feet to the pier at **Harborton,** 2 miles above the mouth, and thence 4 feet to the ruins of **Boggs Wharf,** 3 miles above the mouth. Above this point the creek shoals rapidly. The entrance and inside channel are marked as far as Harborton. Barges load pulpwood at Harborton for delivery to West Point on York River.

Chart 12228

(30) **Onancock Creek** (37°43.4'N., 75°51.1'W.), 38 miles north of Cape Charles, has traffic in petroleum products, sand, and gravel. A marked dredged channel leads across the entrance bar and up the creek to an anchorage basin off the town of **Onancock,** about 4.3 miles above the mouth, thence to channels in the **North Branch** and **Central Branch** at the head of the creek. In 2010, the midchannel controlling depths were 5 feet to Onancock, thence 7 feet in the North Branch, with 8 feet in the North Branch basin, thence 4.5 feet in Central Branch to the first bridge, thence 4 to 6 feet in the anchorage basin.

(31) Water and electricity are available at the public dock at Onancock. Gasoline is available at the oil wharf opposite the town dock. Diesel fuel is available by truck. The **harbormaster** makes berthing assignments and monitors VHF-FM channel 16.

(32) **Chesconessex Creek** is 2 miles northward of Onancock Creek. In 1976, shoaling to an unknown extent was reported in the approach to the creek between Chesconessex Buoy 1 and Light 2. Above Light 2, depths are about 8 feet for 1 mile above the mouth to the middle of **Tobacco Island**, thence in 1997, favoring the south side of the channel, 6 feet to **Chesconessex**, about 2 miles above the mouth of the creek; thence in 2001, depths of about 1 to 3 feet could be carried to about 0.4 mile above the town. The creek is used by small local boats.

(33) The approach to Chesconessex Creek from eastward of Watts Island Light is marked by buoys and a light; the channel above the entrance is marked by daybeacons and sometimes bush stakes.

(34) The southern and main entrance to **Pocomoke Sound,** between the southern end of **Watts Island** and **Pocomoke Sound Light 6** (37°47'49"N., 75°50'19"W.), is 40 miles northward of Cape Charles. Extensive flats occupy most of the sound. A channel, wide and deep at the entrance but comparatively shallow in its most northerly part, leads to Pocomoke River, the most important tributary.

(35) The shores of Pocomoke Sound are low and without prominent natural landmarks. The critical points along the main channel between the entrance and the mouth of Pocomoke River are marked by lights and buoys. The Virginia-Maryland boundary line is marked by buoys with orange and white bands, and diamond-shaped white daybeacons with orange reflective borders.

(36) The sound is used by many local oyster and fishing boats and by some tugs and barges. Small boats can enter from northwestward in Tangier Sound by way of Broad Creek, which is discussed later.

(37) A string of marshy islands and large shoals separates the lower part of Pocomoke Sound from Tangier Sound on the westward. **Watts Island,** southernmost of the string, is marshy and wooded. Watts Island Warning Light is 0.6 mile south-southwestward of the island.

(38) **Little Fox Island**, 5 miles northward of the entrance, is low with flats between it and Watts Island. The flats are shallow and should not be navigated without local knowledge. **Great Thorofare,** just northward of Little Fox Island, has depths of 2 feet and is sometimes used by local boats.

(39) **Great Fox Island,** 6 miles northward of the entrance to Pocomoke Sound, consists of a group of low islands, the northeasternmost of which is marked by a large building.

(40) Just north of Pocomoke Sound Light 6, a marked crooked tributary channel with depths of 8 feet or more leads between shallow flats for 5 miles into a dredged channel in Deep Creek. In 2005, the controlling depth in the dredged channel from the entrance to the turning basin at the town of **Deep Creek** was 1.9 feet, thence depths from 1.2 to 2.5 feet were in the turning basin. The channel is marked by lights and daybeacons. Gasoline, diesel fuel, marine supplies, and a 25-ton travel lift are available at a boatyard in Deep Creek.

(41) Deep Creek is used only by small local boats, many of which enter from Hunting Creek on the eastward by way of **The Notch,** a passage behind the 1.5 mile chain of islands which separates the outer parts of the two creeks; the controlling depth in The Notch is about 2 feet; the channel is marked by bush stakes.

(42) Another tributary channel, 3.5 miles northeastward of Pocomoke Sound Light 6, leads to **Hunting Creek** along the south side of **Guilford Flats** and southward through **The Thorofare** to the wharf at **Hopkins** on the east side of Hunting Creek, 2.5 miles above the mouth. The marked channel has depths of 7 feet or more to within 0.7 mile of Hopkins, thence 2.5 feet to the wharf.

(43) **Guilford Creek** is 2.5 miles northeastward of Hunting Creek, with which it has a common approach from the main channel as far as the light on the southwest end of Guilford Flats. The channel to Guilford Creek continues eastward along the flats, then turns northeastward and rounds a light off the mouth of the creek; the total distance from the main channel is about 8 miles and depths are 8 feet or more all the way. In 2010, the controlling depth was 2.3 feet to the turning basin, thence 4.1 feet in the basin.

(44) **Messongo Creek** empties into the east side of Pocomoke Sound 8 miles northeast of Pocomoke Sound Light 6. The unmarked approach to Messongo Creek is from west-southwestward. In 2009, depths had shoaled to less than 2 feet at the mouth of the creek to about 1 foot at the village of **Marsh Market,** 2.5 miles above; extreme caution is advised. The creek is used only by small local boats.

(45) **Starling Creek** is on the southeast side of Pocomoke Sound 9 miles northeast of Pocomoke Sound Light 6. A dredged channel, marked by lights and daybeacons, leads from the sound to a harbor basin on the north side of the creek. Starling Creek Light 1 has a seasonal sound signal. In 2010, the controlling depth was 2 feet to the basin, thence depths of 1.5 to 4 feet were in the basin, except for lesser depths on the sides. **Saxis,** on the northeast side of the creek, is the center of a considerable shellfish industry. Gasoline and diesel fuel can be obtained at the bulkhead, and some groceries are available in the town.

Charts 12228, 12230

(46) **Pocomoke River** flows into the northeast end of the Pocomoke Sound 15.5 miles above Pocomoke Sound Light 6. The river has traffic in sand and gravel, pulpwood, and some fish products. The marked approach through Pocomoke Sound has natural depths of 7 feet or more for 12.5 miles above the southern entrance, then the route passes through a marked dredged cut to the mouth of Pocomoke River. In 2010, the midchannel controlling depth in the dredged section was 2.8 feet. The cut is subject to continual shoaling, and lesser depths may be found, particularly on the southerly side of the channel.

(47) Pocomoke River has depths of 7 feet or more from the mouth for 14 miles to Pocomoke City, thence 5 feet or more for 12 miles to Snow Hill. Navigation is easy for 20 miles, but the remainder of the channel to Snow Hill is narrow and requires local knowledge to carry the best water. Freshets cause a rise of 1 to 5 feet at Snow Hill, but are not dangerous. The water is fresh above **Rehobeth**, 7.5 miles above the mouth.

(48) **Shelltown** is a village on the west bank of Pocomoke River 1 mile above the mouth. Gasoline, diesel fuel, and some supplies can be obtained in the village. Marine railways at Shelltown can handle craft up to 40 feet long.

(49) **Pocomoke City,** on the east bank 14 miles above the mouth, has bus and rail communication, and all kinds of supplies. There are public landings at the highway bascule bridge. Electricity, water, and pumpout facilities are available. The railroad bridge over the river at Pocomoke City has a swing span with a clearance of 4 feet; the best water is in the western opening. (See **117.1 through 117.49,** chapter 2, for drawbridge regulations.) The overhead power cables 0.3 mile below the bridge have a clearance of 57 feet. The highway bridge 0.5 mile above the railroad bridge has a bascule span with a clearance of 3 feet. (See **117.1 through 117.59 and 117.569,** chapter 2, for drawbridge regulations.) The fixed highway bridge 1 mile above the railroad bridge has a clearance of 35 feet.

(50) A dredged channel about 22 miles above the mouth of Pocomoke River leads southerly from the river to **Shad Landing State Park**; a marina and turning basin are at the head of the channel. In 1983, the midchannel controlling depth was 4 feet in the channel, and depths of 6 to 7 feet were in the basin. The channel is marked by a light and a daybeacon. Gasoline and some supplies are available.

(51) **Snow Hill**, the town on the east bank 26 miles above the mouth, has rail freight service. The highway bridge just above the wharves has a 40-foot bascule span with a clearance of 2 feet. (See **117.1 through 117.59 and 117.569,** chapter 2, for drawbridge regulations.) An overhead power cable just above the bridge has a clearance of 61 feet. The river is navigable for 2 miles above the bridge. Gasoline and some supplies are available in the town.

(52) A line of marshy islands and flats, with Tangier Island at the south end, separates Tangier Sound from Chesapeake Bay to the westward; the principal thorofares between the islands are Kedges and Hooper Straits.

(53) The danger zone of a naval missile target area is centered about 3.5 miles west-southwest of **Tangier Island**. (See **334.210,** chapter 2, for limits and regulations.) Sunken ships and other obstructions are within the area.

(54) **Tangier Island** is low, sparsely wooded in the middle, and bare on the north and south ends. **Tangier** is the village midway along the eastern side of the island; a church spire and two television towers are prominent. Oystering, crabbing, and fishing are the principal industries. The island has telephone and motorboat communication with Crisfield.

(55) **Tangier Sound Light** (37°47'17"N., 75°58'24"W.), 45 feet above the water, is shown from a white square tower with a black and white diamond-shaped daymark on piles, in depths of 5 feet. The light is 53.3 miles above the Virginia Capes.

(56) **Tangier Sound,** its main entrance 1 mile northeastward of Tangier Sound Light, affords a broad and deep channel extending the 28-mile length of the sound.

Extensive flats border the sound, but the critical points are marked by lights and buoys.

(57) The town of Tangier can be reached from either Chesapeake Bay or Tangier Sound through well-marked dredged channels. A Federal project provides for a 7-foot depth from the Chesapeake Bay to an anchorage basin with 7 feet in the basin, and 8 feet from the anchorage basin to Tangier Sound. (See Notice to Mariners and latest edition of chart for controlling depths.)

(58) (**Note** that the numbering system of marking the aids to navigation in the channel from Chesapeake Bay to Tangier Sound and from Tangier Sound to Chesapeake Bay is not continuous but changes in about 37°49'54"N., 75°59'49"W.)

(59) An overhead power cable with a clearance of 50 feet crosses the channel at Tangier. Gasoline, diesel fuel, and some marine supplies are available at Tangier; a marine railway here can handle craft up to 50 feet for hull and engine repairs.

(60) The flats between Tangier Island and Smith Island, on the north, are shallow and can be navigated only by very small boats at high water.

Chart 12231

(61) **Smith Island** consists of a large group of marshy islands separated by narrow thorofares; travel from place to place is mostly by boat. **Tylerton, Ewell,** and **Rhodes Point** are small villages along the interior channels; crabbing, oystering, and fishing are the principal industries. Gasoline and diesel fuel are available at Ewell and only diesel fuel at Rhodes Point; some supplies can be obtained at the villages. The island has telephone and motorboat communication with Crisfield. A marine railway at Rhodes Point can haul out boats up to 40 feet for hull repairs.

(62) A well-marked 5-mile channel with several dredged sections extends from Tangier Sound through **Big Thorofare** to Ewell, thence northwestward in **Levering Creek** and again through Big Thorofare to Cheseapeake Bay. In 1992-2010, the midchannel controlling depth was 3.4 feet from Tangier Sound to Tyler Ditch; thence in 2010, a midchannel controlling depth of 7 feet to Ewell, thence 7 feet from Ewell to Light 9; thence in 2008-2010, a midchannel controlling depth of 1.8 feet to Chesapeake Bay.

(63) A marked channel leads southward from Big Thorofare through **Tyler Ditch** to Tylerton, about 1.7 miles above the entrance. In 2010, the controlling depth was 6 feet in the dredged section, thence natural depths of about 4 feet to Tylerton.

(64) Another marked dredged channel from Tylerton to Rhodes Point, in 2010, had a controlling depth of 5.5 feet. Local fishermen in shallow-draft boats sometimes approach Tylerton from southward at high water, leaving the main channel in Tangier Sound 7 miles north of Tangier Sound Light and following the deeper water northward into Tyler Creek. The depth in the southern approach is about 4 feet.

(65) **Sheep Pen Gut** is the approach to Rhodes Point from the west. A dredged channel marked by daybeacons leads from Chesapeake Bay through the gut. In 1995-2010, the controlling depth was 1.5 feet. Several other thorofares, with depths less than 3 feet, lead westward from the interior of Smith Island to Chesapeake Bay. Navigation of these channels requires local knowledge.

(66) **Kedges Straits,** between Smith Island on the south and uninhabited **South Marsh Island** on the north, is used by vessels bound from northward in Chesapeake Bay to points southward of Manokin River in Tangier Sound. The inner approach to the straits is about 16 miles north of Tangier Sound Light. A depth of 10 feet can be carried through the marked straits.

(67) **Holland Island Bar Light** (38°04'07"N., 76°05'45"W.), 37 feet above the water, is shown from a white square house with a black and white diamond-shaped daymark on piles in depths of 9 feet on the north side of the bay approach to Kedges Straits; a seasonal sound signal is at the light, which is 6.3 miles due east of a point on the bay ship channel 72.6 miles above the Virginia Capes.

(68) **Solomons Lump Light** (38°02'53"N., 76°00'54"W.), 47 feet above the water, is shown from a white octagonal dwelling, with a square tower, on a brown cylindrical base, in depths of 7 feet on the Smith Island side of Kedges Straits.

(69) Easterly winds raise the water and northwesterly winds lower it sometimes as much as 2 feet below the normal level. In severe winters, floating ice makes navigation of the straits dangerous.

(70) **Holland Straits,** on the north side of Kedges Straits between South Marsh Island on the south and **Bloodsworth Island** and other smaller uninhabited low marshy islands on the north, is generally shallow and should not be used without local knowledge. Sandbars obstruct the Chesapeake Bay side and patches of eel grass uncover in the Tangier Sound entrance on the lower tides. Bloodsworth Island is within a **danger zone-** for naval firing and bombing. A **prohibited area,** within the danger zone and with a radius of 0.5 mile, is close off the western side of the island. (See **334.190,** chapter 2, for limits and regulations of the danger zone and prohibited area.)

(71) **Okahanikan Point Light** (38°11'42"N., 76°05'35"W.), 25 feet above the water, is shown from an concrete pile off the northwest side of Bloodsworth Island about 1.5 miles south of the bay entrance to Hooper Strait.

(72) **Hooper Strait,** between Bloodsworth Island on the south and Hooper Islands and Bishops Head on the north, is the most northerly direct passage from Chesapeake Bay into Tangier Sound and is used by vessels bound from northward in the bay to tributaries at the north end of the sound. The inner approach to the strait is 27 miles north of Tangier Sound Light.

(73) The narrow, crooked channel through Hooper Strait, in 1975, had a controlling depth of 12 feet. The shoals on each side are well marked; strangers should have little difficulty if they pay close attention to the chart. **Hooper Strait Light** (38°13'36"N., 76°04'32"W.), 41 feet above the water, is shown from a skeleton tower with a black and white diamond-shaped daymark in depths of 9 feet midway along the north side of the channel.

(74) **Sharkfin Shoal Light** (38°12'08"N., 75°59'12"W.), 44 feet above the water, is shown above the water, is shown from a skeleton tower with a black and white diamond-shaped daymark in depths of 7 feet on the south side of the approach from the main channel in Tangier Sound.

(75) Fall and winter continual northerly winds may lower the water as much as 2 feet below normal level. The current velocity is about 1.5 knots; the current floods eastward through Hooper Strait. In the winter vessels navigating Hooper Strait are in danger from running ice.

Charts 12231, 12228

(76) **Little Annemessex River** (37°58.0'N., 75°53.8'W.), the approach to the town of Crisfield, empties into Tangier Sound 10 miles north of Tangier Sound Light. The entrance to the river is 0.8 mile wide between **Great Point** on the south and **Island Point,** the southwest end of **Janes Island,** on the north.

(77) A **fish haven** is about 1.3 miles west-southwestward of Great Point.

(78) The main entrance to Crisfield is through the well-marked dredged channel of Little Annemessex River. In 1990, the controlling depth was 8.5 feet (10 feet at midchannel) from Daybeacon 8 to a point about 0.2 mile below the junction with the spur channel to Hop Point; thence in 1991, 6.5 feet in the west half and 4.5 feet in the east half of the channel from Hop Point Channel to Daugherty Creek Canal. The spur channel to the wharves at **Hop Point** had a controlling depth of 8 feet in 1991 to just below the northwest corner of Hop Point, thence shoaling to 3.5 feet at the upper end. Depths of 4 to 7 feet were available off the faces of the wharves at Hop Point. **Brick Kiln Channel,** the L-shaped channel and mooring basin 0.5 mile to the northward, had controlling depths of 4.6 feet (5.8 feet at midchannel) in the channel and 6 feet in the basin in 2007.

(79) The southerly approach to Crisfield from Pocomoke Sound, used extensively by oyster boats, is through crooked **Broad Creek**. In 1994, the controlling depth was 2.5 feet (3.5 feet at midchannel). The northerly approach from Big Annemessex River is through marked **Daugherty Creek** and through **Daugherty Creek Canal**; in 2005-2007, the controlling depth was 3.6 feet through the creek and the canal. The tidal current floods northward in the canal and ebbs southward; the velocity is reported to be about 1.3 knots.

Currents

(80) The current velocity in Little Annemessex River is 0.9 knot.

(81) **Jenkins Creek**, which enters Little Annemessex River close northeastward of Broad Creek, is used by fishermen and crabbers. Depths of 3 feet can be carried 0.5 mile above the mouth of the creek, thence 2 feet for 0.5 mile farther to the highway bridge with a 16-foot fixed span and a clearance of 6 feet; small boats pass through the bridge to piers on the north shore. The creek is marked by private daybeacons.

(82) **Crisfield,** on the east side of Little Annemessex River 2 miles above the mouth, is a fish and seafood processing and tourist center. Waterborne commerce consists chiefly of seafood and petroleum products. The harbor is used by many oyster, fish, and crab boats with drafts of 2 to 6 feet. Small freight and passenger boats operate daily to Tangier and Smith Islands.

(83) Crisfield is a **customs port of entry.**

(84) The Crisfield waterfront is largely built up with bulkhead wharves and timber piers, most of which are privately owned, but open to the public on equal terms. Some of the terminals have mechanical freight-handling equipment, but most of the freight is transferred by hand. Depths at the wharves and piers range from 5 to 12 feet, the deepest being at the outer end of the railroad pier.

(85) **Somers Cove** is a well protected basin on the south side of Crisfield. In 2011, the entrance to the basin had a controlling depth of 8 feet with depths of 8 to 10 feet available in the basin. A state-owned full service marina is on the north side of the cove. A Coast Guard station is on the south side of the cove.

(86) Supplies, gasoline, and diesel fuel are available at Crisfield. The largest marine railway can haul out vessels up to 70 feet in length for repairs; mobile lifts to 50 tons are also available.

Chart 12231

(87) **Big Annemessex River** (38°02.9'N. 75°52.3'W.) joins Tangier Sound 15 miles north of Tangier Sound Light. The river has depths of 8 feet for 4 miles, thence 5 feet for 1 mile, and thence 3 feet for 1 mile. The channel is marked as far as Colbourn Creek.

(88) **Daugherty Creek,** already described, enters the south side of Big Annemessex River 1.3 miles above the mouth. **Jones Creek,** close eastward of the canal, has depths of 2 feet for about 1.5 miles above the mouth. The channel is narrow and crooked; private daybeacons and a buoy mark the channel.

(89) **Colbourn Creek,** on the south side of Big Annemessex River 3.5 miles above the mouth, has depths of 4 feet for about 0.7 mile, thence 2 feet for 0.5 mile. Excellent

storm anchorage with good holding ground is available in depths of 5 feet in midstream 0.3 mile above the entrance.

(90) **Manokin River,** on the east side of Tangier Sound 16 miles north of Tangier Sound Light, is directly across the sound from Kedges Straits, described earlier. The entrance to the river is 3.5 miles wide between **Hazard Point** on the southeast and low **Little Deal Island** on the northwest, but is obstructed by numerous shoals.

(91) The main channel of Manokin River is narrow and crooked, and favors the southeast shore. The channel has depths of about 9 feet to abeam of **St. Pierre Island,** on the north side 4 miles above the mouth, thence 6 feet to within 0.5 mile of **Locust Point,** on the northwest side 7 miles above the mouth, and thence 1 foot to **Princess Anne,** 15 miles upstream.

(92) The channel is marked to a point about 6 miles above the mouth. The lower of the two fixed highway bridges, 14 miles above the mouth, has a clearance of 3 feet. Most of the piers and wharves along the river are in poor condition.

(93) **Goose Creek,** on the south side of Manokin River 1.3 miles above Hazard Point, is used by local fishermen and pleasure craft. A channel marked by lights and daybeacons leads to the village of **Rumbley** on the northeast side of the creek. In 2008, the controlling depth was 2 feet. Goose Creek has considerable traffic in crabs and oysters. Berths, gasoline, diesel fuel, and marine supplies are available. Hull and engine repairs can be made; a 15-ton mobile lift is available.

(94) **St. Peters Creek,** used mostly by fishing boats, is on the north side of Manokin River 5.5 miles above the mouth. A marked dredged channel leads to a basin and public wharf 1 mile above the entrance. In 2008, the controlling depth was 1.5 feet in the channel and basin.

(95) A marked dredged channel, 21 miles north of Tangier Sound Light, leads through **Lower Thorofare** between **Little Deal Island** and **Deal Island** to a mooring basin with bulkhead and several small piers at the fishing village of **Wenona**. In 2010, the controlling depth was 1.8 feet. Gasoline, diesel fuel and some supplies can be obtained at the village.

(96) Another marked dredged channel, 25 miles north of Tangier Sound Light, leads through the west end of **Upper Thorofare** to an anchorage basin at the north end of Deal Island. In 2009, the controlling depth was 3.1 feet (6 feet at midchannel) from the entrance to the anchorage basin, thence depths of 2.6 to 6 feet were in the basin. A highway bridge crosses the thorofare and has a 84-foot fixed span with a clearance of 25 feet. A boatyard just east of the bridges has a mobile lift that can handle boats up to 15 tons for repairs. Gasoline, diesel fuel, berths, and some supplies are available. Beyond the bridge, least depths are about 1 foot southeastward for 2.5 miles to Manokin River.

Chart 12261

(97) **Wicomico River** flows into the north end of Tangier Sound eastward of the inner approach to Hooper Strait, described earlier, and 26 miles north of Tangier Sound Light. The entrance to Wicomico River is 1.5 miles wide between **Long Point** on the south and Nanticoke Point on the north. Waterborne commerce is largely in fish and shellfish, and fish byproducts.

(98) In 2007-2010, the controlling depth in the marked channel was 10 feet to Light 23, thence 11 feet at midchannel to South Prong at Salisbury.

(99) **Great Shoals Light** (38°12'52"N., 75° 52'46"W.), 37 feet above the water, is shown from a white skeleton tower with a black and white diamond-shaped daymark on piles in depths of 4 feet on the north side of the channel, 0.5 mile above the mouth; a seasonal sound signal is at the light.

Currents

(100) Strong tidal currents set across the main channel off Monie Bay; the current velocity in the entrance to the river is 0.6 knot on the flood and 0.9 knot on the ebb.

Ice

(101) Ice usually forms on the river as far down as Whitehaven; in ordinary winters the channel usually is open to navigation, but in severe winters it is often closed for extended periods.

(102) **Monie Bay** is a large cove on the southeast side close within the mouth of Wicomico River. The bay has depths of 4 feet to the head, but is used only by small local boats.

(103) **Webster Cove,** on the south side 3.5 miles upriver, is entered by a marked dredged channel which leads to a public wharf inside. In 1995, the controlling depth was 4.5 feet.

(104) **Whitehaven,** on the north bank 6.5 miles above the entrance, has some supplies. Most of the docks are in poor condition. A marine railway can haul out boats up to 150 feet.

(105) A cable ferry crosses the river at Whitehaven. The ferry operates only during daylight hours. The cable is picked up as the ferry moves from bank to bank and is dropped to the bottom when the ferry is not operating. The crossing is unmarked. Caution should be exercised while navigating in the area. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(106) **Wicomico Creek,** on the south side of Wicomico River 8.5 miles above the mouth, is navigable for small craft for several miles. The marked entrance channel has a controlling depth of about 4 feet with deeper water inside. A small yacht club on the north side of the entrance has gasoline and diesel fuel. A marina about 2.3 miles above the entrance has gasoline, diesel fuel, berths, and marine supplies. Hull and engine repairs can be made; a mobile lift is available.

(107) An overhead power cable about 14 miles above the mouth of Wicomico River has a clearance of 75 feet.

(108) A cable ferry crosses the Wicomico River at **Upper Ferry,** 15 miles above the mouth. The ferry operates only during daylight hours. The cable, held taut by winches ashore, is suspended at or near the water's surface at all times during daylight hours, but dropped to the bottom during nondaylight hours. The signal for lowering the cable is one blast on the whistle by a transiting vessel. The ferry slips are marked as a ferry crossing and warning signs are posted up and downstream of the crossing. Caution should be exercised when navigating in the area. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(109) Fishing boats use the large wharf on the south bank, 16.5 miles above the mouth; water is available. An overhead power cable, 17.7 miles above the mouth, has a clearance of 75 feet.

(110) **Shad Point** is 18 miles above the mouth on the southeast side.

(111) **Salisbury,** the head of navigation 20 miles above the mouth, is a major trading center of the Eastern Shore. Wicomico River forks at the city; the **North Prong,** in 1976–1977, had a controlling depth of 7.5 feet or 10 feet at midchannel to the fixed bridge 0.4 mile upstream, but **South Prong** is rarely used. The Main Street highway bridge and the U.S. 50 highway bridge over the entrance to North Prong have 40-foot-wide bascule spans with a minimum clearance of 1 foot. The bridgetenders monitor VHF-FM channel 16 and work on channels 13 and 68; call signs KZA-869 and KYU-697, respectively. (See **117.1 through 117.59 and 117.579,** chapter 2, for drawbridge regulations.)

(112) Salisbury is a **customs station.**

(113) Most of the commercial wharves are below the fork, but there are some in North Prong. Traffic to Salisbury consists of petroleum, aggregates, grain, and fertilizer.

Weather

(114) Salisbury is in a region about midway between the rigorous climates of the North and the mild climates of the South and located on the Delmarva Peninsula immediately south of Delaware.

(115) Rainfall distribution throughout the year is rather uniform with the spread between the wettest month (August) and the driest month (October) being only 2.07 inches (52.6 mm). The average annual precipitation for Salisbury is 44.87 inches (1140 mm). The greatest 24-hour rainfall occurred in October 1980 when 4.93 inches (125.2 mm) fell. The average annual snowfall for Salisbury is 11.4 inches (289.6 mm) of which most falls in January and February. Snow has fallen in each month, October through April and the greatest 24-hour snowfall was 11.7 inches (297.2 mm) in February 1996.

(116) In summer, the area is under the influence of the large semipermanent high-pressure system commonly known as the Bermuda High. Based on climatology, it is usually centered over the Atlantic Ocean near latitude 30°N. This high-pressure system brings a circulation of warm, humid air masses over the area from the deep South. The proximity of large water areas and the inflow of southerly winds contribute to high relative humilities during much of the year.

(117) January is the coolest month, and July, the warmest. The average annual temperature at Salisbury is 56.4°F (13.6°C) with an average high of 66.3°F (19.1°C) and an average low of 45.9 (7.7°C). The warmest temperature on record at Salisbury is 102°F (38.9°C) last recorded in July 1993. The coldest temperature on record is -6°F (-21.1°C) last recorded in January 1987. Each month, October through May, has recorded temperatures below freezing (0°C) while only June and July have seen temperatures in excess of 100°F (37.8°C).

(118) **Nanticoke River** flows into the north end of Tangier Sound 29 miles north of Tangier Sound Light. Waterborne commerce is mostly in petroleum products, but there is also sizable traffic in fertilizers, corn, soybeans, pulpwood, shellfish, and shells.

(119) **Mileages** on Nanticoke River, such as Mile 11W, 19.6E, etc., are the nautical miles above the entrance which is between Nanticoke Point on the east side and **Clay Island** on the west. The letters N, S, E, or W following the numerals indicate the side of the river by compass direction where each feature is located.

(120) A depth of about 10.1 feet can be carried to Sharptown; local knowledge is advised. From the mouth to Wetipquin Creek, the river is more than 1 mile wide, and is obstructed by extensive shoals, most of which are marked. The deepest water is usually near the points rather than in the bends.

Currents

(121) The current velocity in Nanticoke River is 1.2 knots in the entrance. The water is fresh above Vienna. Ice forms on the river in winter, but ordinarily there is enough traffic to keep the channel open. Spring freshets do not interfere with navigation.

(122) **Nanticoke,** Mile 2.5E, has two packing plants. A dredged channel, marked by a buoy and lights, leads to a small boat harbor, protected by jetties, at the village. In 2008, the controlling depth was 2.6 feet in the channel and 6.0 feet in the basin.

(123) **Bivalve** is at Mile 5.4E. A marked dredged channel leads to a municipal small-boat basin, 0.4 mile northeastward of the village. The basin is protected by jetties that are awash at high water. In 2012, the controlling depth in the entrance channel was 3 feet, thence 4 feet in the basin. Gasoline, diesel fuel, berths, and limited marine supplies are available.

(124) **Wetipquin Creek,** Mile 7.0E, is entered through an unmarked dredged channel to the wharf at **Tyaskin** on the south side of the creek just inside the entrance. In 2001, the reported controlling depth was 4 feet in the channel with 4 feet alongside the wharf. A surfaced launching ramp is available.

(125) **Vienna,** Mile 19.6W, has a public bulkhead wharf. A launching ramp is 100 yards below the bridge. Gasoline and some supplies can be obtained nearby.

(126) The overhead power cables crossing the river at the electric power plant at Mile 19.6 have a clearance of 135 feet. The highway bridge at Mile 20.1 in Vienna has a fixed span with a clearance of 50 feet.

(127) **Marshyhope Creek,** Mile 24.1W, has depths of 5 feet to the Harrison Ferry bridge, 9 miles above the entrance, above which point the creek is obstructed by snags and debris. The highway bridge at **Brookview,** 5 miles above the entrance, is kept in the closed position with a clearance of 11 feet. (See **117.563,** chapter 2, for drawbridge regulations.)

(128) **Sharptown,** Mile 26.1E, has a bulkhead wharf but little waterborne commerce. Pulpwood is loaded at the south end of town for West Point on York River. The highway bridge over the river at the town has a fixed span with a clearance of 50 feet.

(129) The Maryland-Delaware boundary line on Nanticoke River is at about Mile 27.5.

(130) **Broad Creek**, DE, Mile 29.0E, had a midchannel controlling depth of 1.4 feet to Laurel, with shoaling to bare along the edges in 2008. Daybeacons mark the channel from the entrance to about 0.5 mile above Bethel. The fixed highway bridge at **Bethel**, 3.5 miles above the entrance, has a clearance of 30 feet. The overhead power cables close eastward of the bridge have a least clearance of 50 feet. **Laurel**, 6 miles above the entrance, has a fertilizer plant and several mills. The railroad bridge at Laurel has a swing span with the north opening obstructed; the south opening has a width of 40 feet and a clearance of 14 feet. Between this bridge and the dam, 0.3 mile upstream, are two drawbridges and a fixed bridge which have a minimum width of 37 feet and clearance of 2 feet. (See **117.1 through 117.59 and 117.233**, chapter 2, for drawbridge regulations.) There are several power cables and a telephone cable crossing the creek near the bridges at Laurel, which have a minimum clearance of 20 feet.

(131) The vehicular cable ferry over Nanticoke River at **Woodland,** Mile 31.3W, operates during daylight hours only. The cable held tight by a winch ashore is suspended at or near the water surface at all times during ferry crossings and dropped when loading or unloading cars at the slips and during non-daylight hours. The ferry slips are marked, and warning lights and signs are posted facing up and downstream. Caution should be exercised. while navigating in the area. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(132) A power cable crossing at Mile 33.7 has a clearance of 75 feet.

(133) **Seaford,** DE, Mile 34.7N, has several mills and factories. The Conrail bridge at Mile 34.4 has a swing span with a width of 47 feet in the southeast opening and no vertical clearance. (See **117.1 through 117.59 and 117.243,** chapter 2, for drawbridge regulations.)

(134) The highway bridge at Mile 34.7 has a 40-foot bascule span with a clearance of 3 feet. (See **117.1b and 117.240,** chapter 2, for drawbridge regulations and opening signals.) Depths of 7 feet are said to extend 1.5 miles above the highway bridge, and small boats can go to a milldam 5 miles from the bridge, but there is little traffic above Seaford. Gasoline, diesel fuel, and some supplies are available in the town.

(135) **Fishing Bay** is at the north end of Tangier Sound 28 miles north of Tangier Sound Light. The entrance to the bay is 3 miles wide between Clay Island on the east and **Bishops Head Point** on the west. The partially marked channel in Fishing Bay has depths of 9 feet for 2 miles, thence 13 to 30 feet for 4 miles, and thence 4 to 3 feet to the head, 9 miles above the mouth.

(136) **Tedious Creek,** on the west side of the bay 2 miles above Bishops Head Point, has depths of 4 feet for 0.5 mile from the mouth, then for 0.7 mile shoals gradually to 1 foot at the head. The entrance is marked by a light. The cove at **Crocheron,** a village on the south side of the creek just inside the entrance, has a county wharf and ramp.

(137) **Goose Creek,** on the west side of Fishing Bay 3 miles above the entrance, has a marked dredged channel which, in 2007, had a controlling depth of 1.2 feet to the wharves just inside; gasoline is available. **McCreadys Creek**, on the east side of Fishing Bay 4 miles above the entrance, has a marked dredged channel which, in 2007, had a controlling depth of 3.9 feet to the head of the project. Gasoline and some supplies are available at the village of **Elliott**, 0.6 mile inland.

(138) **Farm Creek,** on the west side of Fishing Bay 5 miles above the entrance, has a marked dredged channel which, in 1995, had a controlling depth of 4.5 feet to just below the head of the project; thence in 1992, 1 to 6 feet off the piers at the head.

(139) **Honga River** extends northwestward from the western part of Hooper Strait for 14 miles between the mainland on the northeast and the Hooper Islands on the southwest; the river is more than 1 mile wide for most of its length. Honga River has a sizable traffic in shellfish and shellfish products.

(140) The southern and main entrance to Honga River is between Hooper Strait Light on the east and Honga River Light on the west. The narrow crooked channel in the river has depths of 13 to 55 feet as far as **Wroten Island,** on the east side 8.5 miles above the southern entrance, and thence 8 feet for 1.5 miles to the improved channel, described later, leading northwestward and westward to Fishing Creek. Depths northward of the Fishing Creek channel are 4 to 5 feet, shoaling gradually to 2 feet at the head. In 1980, shoaling to 2.5 feet was reported between Light 2 and Daybeacon 4 and to 2 feet between Light 5 and a point about 0.8 mile north of Light 5. The river is marked as far as Fishing Creek.

(141) **Fox Creek** is on the northeast side of Honga River 2.5 miles above the entrance. A light marks the east side of the creek entrance, and a daybeacon marks the point

of a shoal that extends southeastward from **Paul Point.** The creek has depths of 8 feet to a line from Paul Point to **Wingate Point,** on the east side 2 miles above the entrance, then shoals gradually to 1 foot at the head, 1 mile farther up.

(142) **Duck Point Cove,** on the east side just inside the entrance of Fox Creek, has general depths of 1 to 5 feet. In 2007, the marked dredged channel into **Hearns Cove** had a controlling depth of 1.8 feet in the east half of the channel and 1.2 feet in the west half, thence 4.3 feet in the basin at **Wingate.** Greater depths may be available with local knowledge. The oyster-packing plants here have small wharves for the oyster boats. Gasoline is available.

(143) A 2-foot channel marked by private stakes leads to a marine railway in **Insley Cove** at the northeastern end of Fox Creek; boats up to 50 feet can be handled for hull repairs.

(144) The three **Hooper Islands** divide Honga River from Chesapeake Bay and Tar Bay. Middle and Upper Hooper Islands are connected with each other and with the mainland by bridges. **Hoopersville** is a village with general stores and packing plants on Middle Hooper Island, 3.5 miles above the southern entrance of Honga River. A dredged channel in **Muddy Hook Cove,** which is marked by a light and daybeacons, leads to a fish company-owned wharf at the village. In 2011, the controlling depth was 3 feet in the channel with 1 to 3 feet in the basin. A charted wreck just north of the channel covers at high water and is hazardous to navigation. Gasoline and diesel fuel are available at the wharves.

(145) The highway bridge over the passage between **Middle Hooper Island** and **Upper Hooper Island,** at **Ferry Point,** has a fixed span with a clearance of 35 feet. The marked passage through the bridge from Honga River to Chesapeake Bay has a controlling depth of about 2 feet, but greater depths can be carried with local knowledge.

(146) **Back Creek,** midway along the inner side of Upper Hooper Island 8.8 miles above the river mouth, has a marked dredged channel that leads to a basin at its head. In 2004, the controlling depth in the channel was 7 feet and in the basin, except for shoaling to 2.4 feet in the SW edge of the basin. Oysterhouses and a marine railway are along the creek; boats up to 45 feet can be hauled out for repairs. A boat yard in Back Creek has gasoline, diesel fuel, water, ice, a pump-out facility, hull and engine repairs, and lifts up to 60 tons.

(147) **Wallace Creek** empties into the eastern side of Honga River 12 miles above the mouth. A privately dredged channel, marked by daybeacons, leads from Honga River to a public landing and a marina at **Crossroads**, 1.9 miles above the entrance. In 1988, the reported controlling depth was 2.5 feet. Berths, gasoline, diesel fuel, and some supplies are available.

Charts 12264, 12261

(148) A 4-mile dredged channel marked by lights leads from the upper part of Honga River, 10.3 miles above the mouth, through Fishing Creek and Tar Bay to Chesapeake Bay. In 2011, the controlling depth was 3 feet from the entrance at Light 10 to Daybeacon A; 2.5 feet to Tyler Cove Channel; 2 feet to Daybeacon B, thence 1.5 feet through Tar Bay to Chesapeake Bay.

(149) **Fishing Creek** lies between Upper Hooper Island and **Meekins Neck.** The highway bridge over the creek has a fixed span with a clearance of 24 feet. The overhead power cable just west of the bridge has a clearance of 65 feet.

Currents

(150) The current velocity in Little Choptank River is estimated to be 3 knots.

(151) A public wharf and several private wharves are along the creek.

(152) A dredged channel in **Tyler Creek,** just west of the bridge and on the north side of Fishing Creek, leads to an anchorage basin in Tyler Cove. The channel to the basin is marked by daybeacons. In 2011, the controlling depth was 1 foot in the entrance channel and 5 feet in the basin. The largest marine railway can handle boats up to 45 feet for repairs; some supplies can be obtained at **Honga,** on the south side at the bridge. A marina 0.3 mile west of the bridge has gasoline, diesel fuel, and berths; the narrow entrance channel, marked by bush stakes, has depths of about 3 feet.

(153) **Tar Bay,** west of Meekins Neck and Upper Hooper Island, is separated from Chesapeake Bay by Barren Island and a smaller island to the northward. The bay is shallow and unimportant except for the channel that leads through it from Honga River to Chesapeake Bay.

Chart 12266

(154) A group of rocks at about 38°37.0'N., 76°21.8'W., sometimes awash at low tide, is all that remains of **Sharps Island.** Submerged pilings are about 0.2 mile southward of the rocks.

(155) **Fish havens** with an authorized minimum depth of 15 feet are about 4 miles south-southwestward of Sharps Island.

(156) **Little Choptank River** joins the eastern side of Chesapeake Bay 6 miles south-southeastward of Sharps Island. Although obstructed by shoals, the river has depths of 11 feet in a crooked channel for 7 miles and the tributaries have depths of 5 feet for considerable distances. The river is marked as far as Fishing Creek, above which it is difficult to carry more than 7 feet without local knowledge. The tributary channels are usually marked by bush stakes, but navigation is difficult without some local information.

Tide and currents

(157) The current velocity is about 0.3 knot. The river carries some commercial traffic in shellfish and shells.

(158) The entrance to Little Choptank River is between **James Island** on the southwest and **Hills Point** on the northeast. James Island is subject to rapid erosion. Good anchorage is available in depths of 12 to 18 feet in the bight between James Island and **Hooper Point,** which is on the west side of the entrance to Slaughter Creek.

(159) **Slaughter Creek** (chart 12264), on the south side of Little Choptank River 4 miles above the mouth, has depths of 3.7 feet over the bar, thence 6 feet to the bridge at the village of **Taylors Island,** 2 miles above the entrance. The creek is marked by lights and daybeacons; a daybeacon on the west side of the entrance marks a submerged pile. The creek is used by oyster tongers and crab fishermen. A marina on the east side of the creek just north of the bridge has gasoline, diesel fuel, some supplies, and berths; a 25-ton mobile hoist is available for repairs.

(160) **Brooks Creek,** on the north side of Little Choptank River 5 miles above the mouth, has depths of 10 to 4 feet in a narrow channel for 2 miles then depths decrease to 2 feet at the head. The narrow entrance is marked, but local knowledge is required to carry the best water. There are small-craft facilities on the west side of the creek along Hills Point Neck. A marine railway can handle boats up to 40 feet for repairs.

(161) **Hudson Creek,** on the north side of Little Choptank River 6 miles above the mouth, has depths of 5 feet for 3.2 miles to just below **Hudson,** a village at the head. The entrance is marked, and the upper reaches usually are bush-staked. The wharves at Hudson are in poor condition.

(162) **Madison Bay,** on the south side of the river opposite Hudson Creek, has depths of 1 to 9 feet. The entrance to the bay is marked by a light. A dredged channel, marked by daybeacons, leads through the upper part of the bay to a turning basin. The east end of the turning basin is connected to an anchorage basin at **Madison**, a village at the head of the bay. In 2008, the controlling depths were 4.6 feet in the east half and 2.7 feet in the west half of the entrance channel, thence 4.8 feet in the turning basin, thence 5.8 feet in the anchorage, thence 1.9 feet in the channel south of the basins. Gasoline, diesel fuel, and some supplies are available at the wharf at Madison.

(163) **Fishing Creek,** on the southeast side 7 miles above the river mouth, has a controlling depth of 5 feet for 4 miles to the forks at the head. The channel is narrow and crooked, and difficult to navigate without local knowledge. There are several small piers along the creek which is used extensively by boats bound for Church Creek, the principal tributary. The entrance is marked by daybeacons, and the upper reaches usually are marked by bush stakes. **Northeast Branch** and **Southeast Branch** have depths of 3 feet.

(164) **Church Creek,** on the south side of Fishing Creek 2.5 miles above the latter's mouth, has depths of 6 feet for 0.8 mile, thence 4 feet for 0.8 mile, and thence 1 to 3 feet for 0.3 mile to **Church Creek,** a village near the head.

(165) Other tributaries of Little Choptank River have depths of 2 to 5 feet, and are used by small local boats.

(166) **Choptank River** (see also chart 12268), which flows into Chesapeake Bay 2 miles eastward of Sharps Island Light, is navigable for 53.4 miles to the town of Greensboro. Traffic on the river consists chiefly of petroleum products, fish and shellfish, shells, grain, soybeans, and fertilizer.

(167) **Mileages** on Choptank River, such as Mile 8N, 13S, etc., are the nautical miles above the entrance between Blackwalnut Point on the north and Hills Point on the south. The letters N, S, E, or W following the numerals indicate by compass direction the place where each feature is located.

(168) The principal approach to Choptank River is from southward through a buoyed channel commencing 6 miles southward of an abandoned lighthouse (38°38'20"N., 76°22'34"W.); the controlling depth is about 25 feet. The approach from northward, between designated fishtrap areas, has a least depth of 10 feet.

(169) The Choptank River main channel has depths of 19 to 25 feet to Cambridge, 15 miles above the mouth, thence in 1975, a controlling depth of 5 feet to Denton and a centerline controlling depth of 2 feet to the fixed bridge at Greensboro. The channel is marked as far as Denton.

Currents

(170) The river water is fresh above the town of Choptank. The current velocity is about 0.7 knot in the entrance off Cook Point. In Choptank and Tred Avon Rivers the current velocity is less than 1.0 knot.

(171) **Caution.**–It has been reported that during the winter many of the buoys marking the main river channel from the entrance to Cambridge may be moved off station due to ice conditions. It has been further reported that several vessels have grounded on the charted 12-foot shoal close westward of the main river channel in (38°37'37"N., 76°08'15"W.), about 0.2 mile southward of Lighted Buoy 18; mariners are advised to give this area a good berth. In 1970, a stake was reported southward of the main river channel in 38°35'47"N., 76°06'34"W., near Mile 11.9.

(172) Two miles above Hills Point, on the south side of the entrance, is shallow **Trippe Bay,** which is little used except by small oyster and fishing boats. The channel to **Brannock Bay** is marked by daybeacons.

(173) **Tilghman Island,** north of the entrance to Choptank River, has a substantial crabbing, oystering, and fishing industry. The island, 3 miles long in a north-south direction, is subject to rapid erosion on its western side.

(174) **Blackwalnut Cove,** at the south end of Tilghman Island, is well sheltered except from the south, and is used extensively by small boats. A marked dredged channel leads to a basin at the upper end of the cove. In 2008, the

controlling depth was 2.3 feet in the channel, with 5.5 feet in the basin except for shoaling to 3.6 feet along the northern and eastern edges. A public pier at the south end of **Fairbank** has depths of 3 feet at the outer end.

(175) **Dogwood Harbor**, on the eastern side of Tilghman Island, has depths of 7 feet to a yacht club. A dredged channel in the upper part of Dogwood Harbor leads northwestward from just above a yacht club to an anchorage basin at Tilghman. In 2007, the controlling depth in the channel was 5.7 feet with 5.9 feet in the basin. No services are available in the harbor.

(176) **Knapps Narrows**, between the mainland and the northern end of Tilghman Island, affords passage from Choptank River to Cheasapake Bay. In 2010, the controlling depth was 6.7 feet from the Choptank River to the highway bridge, thence 3.9 feet to the Chesapeake Bay. **Note** that the system of marking is from each entrance and reverses at the bridge. The 42-foot highway bridge over the narrows has a bascule span with a clearance of 12 feet. The bridgetender monitors VHF-FM channel 16 and works on channels 13 and 68; call sign KZA-868. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) The current at the bridge is reported to be 2 knots.

(177) The village of **Tilghman** is on the south side of Knapps Narrows. The bulkheaded sides of the turning basin on the west side of the southerly abutment of the bridge are available for public use. In 1981, depths of 4 to 7.5 feet were available in the basin, except for shoaling to 2 feet in the northeast corner. Full service marinas and boatyards are on either side of the narrows.

(178) **Harris Creek** empties into Choptank River at Mile 2.3N, along the east side of Tilghman Island. The channel has depths of 10 feet, with local knowledge, and is marked as far as Cummings Creek, 5.5 miles above the mouth. Above this point the narrow and crooked channel has depths of 6 feet to the forks, thence 5 feet in a channel marked by private stakes for 1 mile up **Northeast Branch** (chart 12270), and thence 2 feet for 1 mile to the head of the branch, 9 miles above to the mouth of the creek. **Northwest Branch** (chart 12270) also extends 2 miles from the forks, and has a controlling depth of about 2 feet to its head.

(179) **Sherwood** is a village on the west side of Harris Creek 4.5 miles above the mouth. The county wharf at the village, available for public use, has depths of 3 feet alongside.

(180) **Cummings Creek** empties into the northwest side of Harris Creek 5.5 miles above the mouth. A depth of about 5 feet can be carried up Cummings Creek to the county wharf at **Wittman** (chart 12270). The larger of two boatyards along the prongs just eastward of Cummings Creek can handle boats up to 40 feet for hull repairs.

(181) **Broad Creek,** Mile 4.4N, has depths of 16 feet as far as **Edge Creek,** on the east side 3 miles above the mouth. Above Edge Creek, the winding channel has depths of 9 feet for 3 miles, then shoals gradually to depths of 2 feet at the head, 7.5 miles above the entrance. The wide entrance channel is marked, but some local knowledge is needed in the narrow unmarked upper reaches.

(182) **Balls Creek,** on the west side of Broad Creek 1 mile above the entrance, has depths of 6 to 7 feet almost to its head; the narrow entrance is marked by a light and the channel by daybeacons. **Neavitt** is a village on the southwest side near the head.

(183) **Grace Creek,** on the west side of Broad Creek 2.3 miles above the entrance, is marked by daybeacons. A marine railway on the south side near the head of the creek can handle boats up to 40 feet.

(184) **St. Michaels,** a town with its main waterfront on Miles River, can be reached from Choptank River by way of Broad Creek, thence southeastward in Edge Creek for 0.7 mile, and thence northward in **San Domingo Creek** for 2.3 miles to its head, 6 miles from the mouth of Broad Creek. San Domingo Creek has depths of 7 feet or more for most of its length, and a controlling depth of 4 feet to St. Michaels. In 1978, shoaling to an unknown extent was reported in 38°45'45"N., 76°13'52"W. In 1991, shoaling to an unknown extent was reported in about 38°45'08"N., 76°13'38"W. The channel is marked by daybeacons. Berthing, electricity, ice, gasoline, diesel fuel, marine supplies, water, pump-out station, engine, electronic, and hull repairs are available; lift to 30-tons.

(185) **Irish Creek,** Mile 4.7N, has depths of 7 feet for 1.4 miles, then shoals gradually to 2 feet at its head, 2 miles above the entrance. In 2004, shoaling to 2.5 feet was reported in the channel between Daybeacons 3 and 4 in about 38°41'35"N., 76°13'24"W., and 38°41'47"N., 76°13'25"W. The narrow approach channel is marked by buoys and daybeacons. The creek is used only by small local boats.

(186) **Tred Avon River,** Mile 7.9N, has natural depths of 16 feet or more for 5 miles, thence 11 feet for 1 mile to **Peachblossom Creek**, thence in 2011, there was a midchannel controlling depth of 8 feet in the dredged channel to Easton Point, 8.5 miles above the mouth. The channel is marked as far as Easton Point. Shoals extend off **Watermelon Point,** on the east side 7 miles above the mouth; above this point midchannel courses can be steered. Caution should be exercised if going beyond Easton Point because of abrupt shoaling. Traffic in the river consists chiefly of petroleum products, shellfish, and pleasure craft.

(187) **Choptank River Light** (38°39'21"N., 76°11'04"W.), 35 feet above the water, is shown from a skeleton tower with small white house on piles in depths of 16 feet 0.6 mile outside the entrance to Tred Avon River. A Coast Guard station is about 1.5 miles NNE of the light.

(188) Small motorboats can find anchorage near midchannel of any of the larger tributaries of Tred Avon River. The river bottom is quite firm, but the bottom in the tributaries is mostly soft mud. There is usually excellent protection from the wind; the brush and trees that line most of the banks provide some protection.

(189) **Oxford** is on the east side of Tred Avon River, 2 miles above the mouth. The principal facilities are along Town Creek on the east side of the town. A marina is on the river side 2 miles above Choptank River Light; the marked entrance channel has a controlling depth of about 4 feet. The ferry landing on the river side of Oxford has depths of 14 feet at the face. Year-round ferry service is maintained to Bellevue, on the opposite side of the river. A public landing nearby has fuel.

(190) **Town Creek** enters Tred Avon River east of Oxford and comprises the waterfront area of the town. A marked dredged channel leads from the entrance to a turning basin at the head of the creek. In 2011, the controlling depth was 7 feet in the entrance of the channel to 38°41'20"N., 76°10'09"W., thence 5 feet at midchannel to the head of the project. Two anchorage basins on the west side of the channel, 0.3 mile and 0.5 mile above the entrance, had depths of 9 feet and 7 feet, respectively.

(191) The several packing houses have wharves along the west bank of Town Creek, and small piers are scattered on both sides.

(192) **Bellevue,** across the river from Oxford, is the site of several oyster-packing plants in ruins but prominent as landmarks. A municipal mooring basin is immediately north of the ferry landing.

(193) **Easton Point,** at the head of Tred Avon River 8.5 miles above the mouth at the junction of **North Fork** and **Papermill Pond,** is 1 mile west of **Easton**. A public wharf and the wharves of the oil terminals are on the point. A marina here has gasoline, diesel fuel, some supplies and slips. A 12-ton lift can haul out boats for repairs.

(194) **Lecompte Bay,** Mile 10.0S, has depths of 7 to 13 feet. A narrow channel, marked at the entrance by private daybeacons, has a controlling depth of about 4 feet and leads to a boatyard 0.5 mile inside **Lecompte Creek** on the west side of the bay. A marine railway can haul out boats up to 50 feet for repairs.

(195) **La Trappe Creek,** Mile 10.6N, has depths of 10 feet for 0.5 mile, thence 5 feet to the bulkhead at **Trappe Landing,** 3 miles above the mouth. The entrance is marked.

(196) **Cambridge,** Mile 15.2S, is the center of a large agricultural area with related industries serving the Delmarva Peninsula. It is the second deepest port in Maryland and has an extensive maritime history. The town has services and facilities for both commercial and recreational mariners. Taxi, bus, truck and air services are available.

(197) A dredged entrance channel leads from deep water in the Choptank River to a turning basin at the mouth of **Cambridge Creek**. Another dredged channel continues from the west corner of the turning basin through Cambridge Creek for about 0.7 mile to a turning basin at the head of the project. Anchorage basins are on each side of the channel about 0.2 mile inside the entrance. In 2010, the controlling depths were 20.1 feet in the entrance channel, thence 18.3 feet in the turning basin. In 1984, the channel through Cambridge Creek had a controlling depth of 11 feet to the turning basin at the head of the project with depths of 9 to 12 feet in the basin; both anchorage basins had depths of 8 to 10 feet.

(198) Most of the waterfront facilities inside the creek have depths of 8 to 12 feet alongside. The State Route 343 highway bridge 0.3 mile above the harbor entrance has a bascule span with a clearance of 8 feet. The bridgetender monitors VHF-FM channel 16 and works on channels 13 and 68; call sign KZA-695; telephone 410-228-8311. (See **117.1 through 117.59 and 117.549**, chapter 2, for drawbridge regulations.)

(199) Marine repairs, services and supplies are available at two boatyards on Cambridge Creek. Dockage is available at the municipal boat basin and along the public bulkhead on the creek below the drawbridge, with anchorage permitted in the basin at the head of the project. Marine railways capable of handling vessels up to 100 feet and travel lifts up to 60 tons are also available. Fuel can be delivered by truck at the public wharf on the north side of the municipal boat basin.

Chart 12268

(200) The fixed highway bridge over Choptank River at the southeast side of Cambridge, Mile 15.5, has a clearance of 50 feet. Sections of the former swing bridge have been converted to recreational fishing piers. A hotel marina about 1.1 miles SE of the bridge, on the south side of the river, has gasoline, diesel fuel, berths, electricity, pump-out station, marine supplies and electronic repairs available.

(201) **Warwick River,** Mile 20.4E, is entered through a marked dredged channel which leads to the bulkhead wharves at **Secretary,** 1 mile above the entrance. In 2009, the channel had a midchannel controlling depth of 4 feet and lesser depths along the edges near the head of the project and shoaling to 0.3-foot on the centerline in about 38°36'43"N., 75°57'58"W. Gasoline is available. A marine railway on the south side of the entrance to the river can haul out boats up to 60 feet for repairs; gasoline is available.

(202) **Cabin Creek,** Mile 22.6E, has depths of 3 feet to the fixed highway bridge 1 mile above the entrance, thence 2 feet for 0.5 mile nearly to the head. Private daybeacons mark the creek to below the bridge. The bridge has a width of 17 feet and a clearance of 7 feet.

(203) **Hunting Creek** at Mile 25.2E has depths of 3 feet for 3 miles to a fixed highway bridge. The fixed highway bridge 0.4 mile above the entrance has a width of 17 feet and a clearance of 7 feet.

(204) **Choptank** is a village at Mile 25.6N. The small yacht harbor at Choptank has depths of 2 to 3 feet behind its wooden bulkheads. A 6 mph, no-wake **speed limit** is enforced. Gasoline is available.

(205) The overhead power cable at Mile 30.7 has a clearance of 139 feet.

(206) Dover Bridge, Mile 33.0, has a swing span with a clearance of 10 feet. (See **117.1 through 117.49, and 117.553(a),** chapter 2, for drawbridge regulations.)

(207) **Tuckahoe Creek** is at Mile 39.5N. The channel in the creek has depths of 8 feet for 2.7 miles, thence 5 feet for 6 miles, and thence less than a foot to the fixed highway bridge from **Hillsboro** to **Queen Anne,** at the head of navigation 11 miles above the entrance. **Tuckahoe Bridge,** 1.7 miles above the entrance, has a 40-foot fixed span with a clearance of 17 feet. The channel is unmarked, crooked, and difficult to navigate in places without local knowledge. The flats are covered with tuckahoes or marsh grass in the summer. The creek is used only by small fishing and pleasure boats. The overhead power and telephone cables just north of the bridge have a clearance of 25 feet. The overhead power cable across the creek about 6 miles above the mouth has a clearance of 32 feet.

(208) **Williston** is a small settlement with a bulkhead landing at Mile 42.0E.

(209) Choptank River is constricted by **Pealiquor Shoal** at Mile 44.3. A dredged channel through the shoal area, in 1977, had a centerline controlling depth of 5.5 feet.

(210) **Denton** is a town at Mile 46.6E. The highway bridge over the river here has a fixed span with a clearance of 25 feet. The railroad bridge 0.4 mile above the highway bridge has a swing span with a clearance of 6 feet. (See **117.1 through 117.59 and 117.553,** chapter 2, for drawbridge regulations.) The fixed bridge 0.4 mile above the railroad bridge has a clearance of 25 feet. The least clearance of the overhead power cables crossing Choptank River at Denton and above is 47 feet.

(211) **Greensboro** is a town at the head of navigation at Mile 53.4W. In 1975, the centerline controlling depth in the dredged channel above Denton was 2 feet to the bridge at Greensboro. The fixed highway bridge at Greensboro has a width of 37 feet and a clearance of 10 feet. Gasoline and some marine supplies can be obtained in town.

Chart 12270

(212) **Eastern Bay**, the approach to Claiborne, St. Michaels, Miles River, and other tributaries, is entered between the southerly tip of Kent Island and the northerly end of Poplar Island, 2.2 miles southward.

(213) The shores are low and have few prominent marks. Light-draft vessels also can enter from southward through Poplar Island Narrows and from Chester River on the north by way of Kent Island Narrows.

(214) **Bloody Point Bar Light** (38°50'02"N., 76°23'30"W.), 54 feet above the water, is shown from a brown tower on a cylindrical foundation about 1 mile westward of the south end of Kent Island. The light is about 1 mile east of a point on the main ship channel 120.2 miles above the Virginia Capes.

(215) The bay is used extensively by oystermen and fishing craft, as well as by increasing numbers of pleasure craft. The channel is wide and deep; within the bay are large shoal areas, but depths of 25 feet can be taken without difficulty to the mouths of most of the tributaries.

Currents

(216) East of Poplar Island the current velocity is 1.0 knot on the flood and 0.6 knot on the ebb. Throughout Eastern Bay the current velocity is less than 1.0 knot.

(217) **Poplar Island,** on the south side of the main entrance, is 1.3 miles long in a north-south direction, and is low and wooded. Smaller **Jefferson Island,** southeast of the northern part of Poplar Island, and **Coaches Island,** east-southeast of the southern end, once were part of the large island. **Poplar Harbor,** formed by the three islands, has secure anchorage in depths of 4 to 6 feet.

(218) **Poplar Island Narrows** has a least width of 1 mile between Coaches Island and the mainland to the eastward. The channel through the narrows is marked.

(219) **Ferry Cove,** on the mainland side of Poplar Island Narrows, is entered through a marked dredged channel which leads to a turning basin on the south side of **Lowes Wharf** at the head. In 2007, the controlling depth from the entrance to the pier pilings at the bulkhead was 3.2 feet, thence less than 1 foot to the turning basin with shoaling to bare in the basin. A marina at the wharf provides water, ice, a pump-out station, berths with electricity, gasoline, diesel fuel, wet storage, a launching ramp and some supplies.

(220) **Claiborne** is a village on the southeast side of Eastern Bay 5 miles by deep channel from the main entrance. A combination pier and jetty extends 0.2 mile west-southwestward from the Claiborne waterfront. The former ferry landing is south of the pier. The channel to Claiborne, marked by a light and private buoys, had a controlling depth of 2.4 feet in the channel to the basin, with 1.4 feet in the left half and shoaling to less than one foot in the right half of the basin in 2007.

(221) **Kent Point,** the northerly entrance point of Eastern Bay, is the southernmost extremity of **Kent Island,** which has a north-south length of 12.5 miles and a greatest width of 5.5 miles.

(222) **Cox Creek** flows southward from the interior of Kent Island into Eastern Bay between **Long Point,** 2 miles northeast of Kent Point, and **Turkey Point,** 3 miles farther to the northeastward. The channel has depths of 22 feet for 1.5 miles, thence 11 feet for 2 miles, thence 7 feet for 2 more miles, and then shoals gradually to 2 feet at the head of navigation, a fixed highway bridge 6.5 miles above the mouth.

(223) A landing at **Romancoke,** 1.5 miles northward of Long Point, has depths of about 4 feet off its end, but is in poor condition. Above Romancoke, Cox Creek has no villages on its shores and is used mostly by oyster boats. The channel is very narrow in places, and shallow water

is close to the edges. The shoals are unmarked, and local knowledge is needed to avoid them.

(224) **Crab Alley Bay** joins Eastern Bay between **Bodkin Island,** 0.8 mile east-southeastward of Turkey Point, and **Parson Island,** 2 miles eastward of Turkey Point. Bodkin Island is very small with sparse vegetation and is protected by a bulkhead. Larger Parson Island is sparsely wooded and has a ragged appearance.

(225) Crab Alley Bay is 8 miles by deep channel from the Eastern Bay main entrance. The principal channel in Crab Alley Bay is marked and has depths of 8 feet for 2.5 miles to Crab Alley Creek, in the northwestern part of the bay.

(226) The mouth of **Crab Alley Creek,** between **Cox Neck** on the west and **Johnson Island** on the east, is partly obstructed by very shallow areas that extend out from both sides. The channel within the creek has depths of 6 feet for 1 mile, then shoals gradually to 1 foot at the head. In 1978, shoaling to an unknown extent was reported on the west side of Johnson Island in about 38°55.8'N., 76°17.6'W.

(227) **Little Creek**, northeast of Johnson Island, is entered through a marked dredged channel which leads to a basin about halfway up the creek. In 2011, the midchannel controlling depth was 6 feet in the channel and basin.

Small-craft facilities

(228) Small-craft facilities are on the east side of Crab Alley Creek and in Little Creek and can provide transient berths, electricity, water, marine supplies, storage, pump-out and a launching ramp. Lifts to 25 tons are available for hull, engine and electricity repairs and a marine railway can haul out boats up to 45 feet.

(229) **Prospect Bay,** in the northeastern part of Eastern Bay, is entered between Parson Island and **Piney Neck Point,** 2 miles to the east-southeastward. The entrance is 9 miles by deep channel from the main Eastern Bay entrance.

(230) Prospect Bay extends northward for 5 miles to the U.S. Route 50/301 highway bridge over Kent Island Narrows. The channel has natural depths of 21 feet for 2 miles, thence 11 feet for 1 mile, and thence 7 feet to the beginning of the marked approach to the narrows, which is described later in connection with Chester River. A **000°-180°** measured course, 0.5 mile long, is 1.2 miles north-northwestward of Piney Neck Point. The course is marked by private seasonal buoys.

(231) A **special anchorage** is in **Cabin Creek** on the northeast side of Prospect Bay. (See **110.1 and 110.71a,** chapter 2, for limits and regulations.)

(232) **Greenwood Creek,** entered on the southeast side of Piney Neck Point east of Prospect Bay entrance, has depths of 5 feet for nearly 3 miles inside, but only about 3 feet can be taken over the bar.

(233) **Miles River** flows into the eastern part of Eastern Bay from southeastward, between **Tilghman Point,** at the northeastern end of **Rich Neck,** and **Bennett Point,** 2.3 miles east-southeastward. The entrance is 8.5 miles by deep channel from the main entrance to the bay.

(234) Miles River channel has depths of 20 feet or more for 6 miles, thence 10 feet to the highway bridge 11 miles above the mouth, and lesser depths to the head 14.5 miles above the mouth. A shallow **middle ground,** about 2 miles above the entrance, bares in one place at low water, but is well marked on all sides by buoys and a daybeacon; the river channel is marked as far as the bridge. In 1991, shoaling to 3 feet had reportedly advanced northward of Wye River Swash Buoy 2 in about 38°50'33"N., 76°12'55"W. The small trade on the river is chiefly in shellfish and shells.

(235) **Tilghman Creek** is on the west side of the entrance along the southeast side of Tilghman Point and Rich Neck. The outer end of Tilghman Point is heavily wooded. The narrow entrance, marked by a light and daybeacons, has depths of about 8 feet; depths of 11 to 8 feet are inside the creek for the remainder of its 1-mile length. A vessel must stay in midchannel to carry the best water. At the upper end of the creek, slips are available at a county wharf; depths to 3 feet alongside were reported in 2003.

(236) **Wye River** flows into the east side of Miles River entrance, just inside **Bennett Point.** The approach can be made either around the middle ground or to the north of it. The northerly approach is shorter by 2 miles, but is limited to depths of 9 feet; the southerly encircling approach has depths of 30 feet or more. Both approaches are marked.

(237) Small local boats are the principal users of Wye River and its several branches. The twisting channels, some partially marked by private daybeacons, require local knowledge. The channel in the river proper has depths of 30 feet or more for 2 miles, thence 10 feet for 4 miles, thence 6 feet for 1.5 miles and shoaler depths, thence to the head 9.5 miles above the mouth. Oyster bars are along the channel edges in the vicinity of **Wye Island.** There are several landings along the river and its branches.

Anchorages

(238) A **special anchorage** is in a small cove along the western side of Wye River, opposite **Drum Point.** (See **110.1 and 110.71b,** chapter 2, for limits and regulations.)

(239) **Wye Narrows**; which branches eastward 4 miles above the mouth of Wye River, follows the north side of Wye Island for 4 miles to its junction with **Wye East River**. The channel through the narrows has a controlling depth of 6 feet. Midway along the narrows is a fixed highway bridge with a width of 43 feet and a clearance of 10 feet.

(240) **Long Haul Creek**, on the west side of Miles River 5 miles above the entrance, has depths of 9 feet or more in most of its 0.6-mile length. The Miles River Yacht Club maintains the **285°** range that marks the channel into the small club harbor in the creek. The range is lighted

Chester River, Maryland
Image courtesy of Waterway Images (2004)

from April through November and reportedly cannot be seen in daylight.

(241) **St. Michaels**, a town at the head of a small harbor on the west side of Miles River 6 miles above the entrance, has a marked entrance with depths of more 10 feet. In 1983, the harbor had depths of 7 to 10 feet in the middle with lesser depths towards the shores, thence in 2008, a controlling depth of 5.6 feet was in the channel leading southward from the head of the harbor to a basin with a depth of 4.2 feet at the end of the channel.

(242) The **Chesapeake Bay Maritime Museum** is at St. Michaels.

Small-craft facilities

(243) Small-craft supplies, gasoline, diesel fuel, a pump-out station, electricity, water, ice, and slips are available at St. Michaels. Largest haul-out equipment for repairs is a 30-ton lift.

(244) **Leeds Creek**, marked at the entrance by a daybeacon, is directly across Miles River from St. Michaels. **Fairview Point**, on the north side of the entrance, is thickly wooded. The creek has depths of 5 feet for 2 miles to the village of **Tunis Mills**, then shoals gradually to 3 feet at the head, 0.5 mile farther up. In 1972, shoaling to an unknown extent was reported in Leeds Creek in about 38°47'56"N., 76°11'39.5"W. and 38°48'05"N., 76°11'35.5"W. The fixed highway bridge from Tunis Mills to **Copperville**, on the northwest side of the creek, has a width of 19 feet and a clearance of 6 feet. An overhead power cable just below the bridge has a clearance of 18 feet.

(245) **Oak Creek,** on the south side of Miles River 8 miles above the entrance, is privately marked by daybeacons and has depths of 2 feet in the mouth, thence 3 to 5 feet for about 0.6 mile to the village of **Royal Oak** at the head of the creek. The fixed highway bridge at the entrance has a width and clearance of 24 feet. Overhead power cables just southward of the bridge have a reported clearance of 36 feet. Above the wharves at **Newcomb**, on the west side just above the bridges, the creek is obstructed by grass.

(246) **Hunting Creek,** directly across Miles River from Oak Creek, has depths of 5 feet for 2.5 miles. The peninsula on the west side of lower Hunting Creek has a breakthrough with a depth of 3 feet, 0.8 mile above the entrance.

(247) The highway bridge over Miles River 11 miles above the entrance has a 40-foot bascule span with a clearance of 18 feet. (See **117.1 through 117.59 and 117.565**, chapter 2, for drawbridge regulations.)

(248) The Chesapeake Bay shore of Kent Island is low and wooded. Marinas 3.8 and 4.8 miles north of Kent Point can provide supplies, gasoline, diesel fuel, berths, electricity, storage and a pump-out station. The southerly marina has a 20-ton lift and the northerly marina has a 35-ton lift available for hull, engine and radio repairs. In 2010, the reported controlling depth was 5 feet in the southerly and northerly marina. Both entrances are

protected by jetties. It is reported that submerged pilings are at the ends of the jetties protecting the southerly marina.

(249) **Matapeake,** 7 miles north of Kent Point, is the site of a former ferry terminal. The jettied entrance channel has a reported controlling depth of about 8 feet leading to a pier of the Maryland Marine Police. The waters inside the jetties are available as a State harbor of refuge in an emergency; a launching ramp is available.

(250) A marina, 1.7 miles north-northeast of Matapeake, is entered through a privately dredged channel marked by private unlighted buoys. In 2003, the channel had a reported controlling depth of 6 feet. Gasoline, diesel fuel, and limited supplies are available. Repairs can be made; mobile lift, 70 tons. The William P. Lane, Jr. Memorial (Chesapeake Bay) Bridge, 9 miles north of Kent Point, is described in chapter 13.

Chart 12272

(251) **Love Point Light** (39°03'25"N., 76°16'59"W.), 35 feet above the water, is shown from a skeleton tower, with a red and white diamond-shaped daymark, 1.4 miles northeast of Love Point.

(252) The main entrance to **Chester River** is between **Love Point,** the northern end of Kent Island, and Eastern Neck Island, 3 miles to the eastward. The approach is northward and eastward of Love Point Light.

(253) A fish haven, marked by a buoy, is in the approach to Chester River about 0.8 mile north-northwest of Love Point Light.

(254) Light-draft vessels can also enter from Eastern Bay and Miles River on the southward by way of Kent Island Narrows. Traffic on the river consists chiefly of petroleum products and shellfish.

(255) **Mileages** on Chester River are designated Mile 7S, 11W, etc., which are the nautical miles above the entrance. The letters N, S, E, or W, following the numerals indicate the side of the river by compass point direction where each feature is located.

(256) Chester River has channel depths of 13 feet or more to Chestertown, thence 7 feet to Crumpton, and thence 5 feet to Kirby Landing, Mile 35.2S. The channel is marked for about 32 miles to Crumpton. Above Chestertown, deepest water is difficult to follow except with local knowledge and extreme caution.

Currents

(257) The current velocity is less than 1.0 knot. The river is usually closed to navigation by ice for extended periods during ordinary winters; in mild winters the channel is kept clear most of the time by powerboats. The river water is fresh above Chestertown.

(258) **Love Point** is a village on the point on the west side of the entrance to Chester River. Shells are received by barge at the old railroad pier on the river side of the village.

(259) **Eastern Neck Island**, on the east side of the entrance, is about 3 miles long in a northwest-southeast direction. The island is sparsely wooded with extensive grassy flats along the south shore. It is connected with the mainland on the north by a fixed highway bridge, clearance 6 feet, over **Eastern Neck Narrows**, which is very narrow and little used.

(260) At Mile 2.7S, a privately marked channel leads to a basin with a marina on its south side. In 2004, 8.0 feet was reported in the approach and 6.0 feet alongside. Gasoline, diesel fuel, berths, electricity, water, ice, some marine supplies, and a pump-out station are available.

(261) **Kent Island Narrows** entrance is at Mile 4.0S. A marked channel, leads from Chester River to Prospect Bay; the chart is the guide. In 2010, the controlling depth was 3.9 feet (4.8 feet at midchannel). Very heavy traffic can be expected through the channel during the summer months, especially on weekends.

(262) The State Route 50/301 highway bridge over the narrows has a fixed span with a clearance of 65 feet. Immediately south of the fixed highway bridge is the MD ROUTE 18 (old State Route 50/301) bascule bridge with a 48-foot span and a clearance of 18 feet. The bridgetender monitors VHF-FM channel 16 and works on channels 13 and 68; call sign KXE-254. (See **117.1 through 117.59 and 117.561**, chapter 2, for drawbridge regulations.) The nearby overhead power cable has a clearance of 85 feet. Temporary mooring areas for vessels awaiting bridge openings have been established by the State of Maryland on the west side of the channel about 50 yards north of the bridge, and 100 yards and 650 yards south of the bridge.

Currents

(263) The current velocity is 1.0 knot on the flood and 0.9 knot on the ebb at the bridge.

(264) Two detached nearly parallel breakwaters, 700 and 1,500 feet long in a northwest-southeast direction, are about 0.3 mile southward of the highway bridge crossing the narrows and about 0.1 mile southwestward of the channel entrance to Wells Cove.

(265) **Wells Cove,** on the east side of the narrows 0.4 mile southeast of the bridge, has general depths of 1 to 5 feet. A marked dredged channel leads to a basin in the cove; in 1966, the controlling depths were 6 feet in the channel and basin.

(266) Many marina piers are along Kent Island Narrows. Complete small-craft facilities are also available in this area.

(267) **Jackson Creek,** Mile 5S, has depths of 2 to 7 feet at the entrance and is used as an anchorage by oyster boats; the channel is marked. The bottom is covered with grass.

(268) **Queenstown Creek,** Mile 6.1E, is entered through a marked channel which leads to a turning basin at **Queenstown,** on the southeast side of **Little Queenstown**

Creek. In 2009, the controlling depths were 3.8 feet in the east half and 1.5 feet in the west half of the channel to a point about 200 yards above Buoy 5, thence 6.1 feet to the basin with 5.5 feet in the basin. The entrance channel is bordered by very shallow grassy flats.

(269) **Grays Inn Creek,** Mile 10.7W, has depths of 8 feet for 2.3 miles to a small settlement on the west side, then shoals gradually to 1 foot. About 1.8 miles above the mouth, a marina on **Skinners Neck** has a marine railway that can haul out craft up to 45 feet for repairs; gasoline is available.

(270) **Langford Creek,** Mile 11.3N., has depths of 12 feet over the bar and deeper water inside to the forks 1.7 miles above the mouth; the channel is buoyed to **Drum Point.** An unmarked shoal extends southwestward from small **Cacaway Island** toward the junction of the two fork channels; above the shoal the unmarked forks are clear in midchannel. **East Fork** has depths of 10 feet for 3 miles, thence 7 feet for 1 mile to within 1 mile of the head. **West Fork** has depths of 8 feet for about 3 miles, thence 6 feet for 0.7 mile.

(271) **Long Cove,** on the west side of Langford Creek 0.7 mile above the mouth, has depths of 4 feet to the head; the entrance to the cove is marked by daybeacons. The largest marine railway in the cove can haul out boats up to 50 feet for repairs; the largest lift is 70 tons. Gasoline, diesel fuel, launching ramp, a pump-out station and some supplies are available.

(272) **Davis Creek,** on the west side of Langford Creek 1.5 miles above the mouth, has depths of 9 feet to a marina on the south side near the entrance. A private daybeacon marks the entrance to the creek. Gasoline, diesel fuel, berths with electricity, a pump-out station, water, and ice are available. Repairs can be made, a 40-ton lift is available.

(273) The common entrance to **Reed Creek** and **Grove Creek** at Mile 10.7E is marked by two buoys. The channel to the fork 0.3 mile above the common mouth has a depth of 6 feet. In 1984, a shoal was reported encroaching the channel from eastward about midway between Buoys 1 and 2. Reed Creek extends southeastward and has depths of 7 feet for about 0.6 mile above the fork, then shoals gradually to 1 foot 1 mile farther up. The channel in Grove Creek is only about 60 feet wide 0.3 mile above the fork, but has depths of 3 feet through the narrows and 5 feet for a mile above that.

(274) **Corsica River** is at Mile 11.9E. In 2009, the controlling depth to the public wharf at **Centerville Landing**, 5 miles above the mouth, was 2.1 feet at midchannel and 0.5 to 1 foot in the turning basin. The lower part of the river is marked, but it is difficult to stay in the upper channel without local knowledge. Some supplies and gasoline can be obtained at Centreville, 0.5 mile inland of the landing. The main wharf at the landing is in poor condition, but a smaller wharf is available.

(275) **Southeast Creek,** Mile 19.8S has depths of 4 feet for 1.8 miles, then shoals to 1 foot at the head of navigation 0.4 mile farther up. **Island Creek,** which empties into the south side of Southeast Creek, 0.5 mile above the mouth, has depths of 3.5 feet in the entrance and 4 feet or more for 2 miles to a fixed highway bridge. Both creeks are marked by bush stakes in the difficult reaches. Private buoys mark a channel leading to **Kennersley Wharf,** on the east side of Island Creek 0.3 mile above the entrance; in 1980, the reported controlling depth was 4.5 feet. Gasoline, berths with electricity, water, and some supplies are available; a 30-ton lift can handle boats for repairs.

(276) A marina is at **Rolphs,** Mile 20.7E. Some supplies, gasoline, diesel fuel, water, ice, a pump out station, a 7-ton lift, and berths with electricity are available. Small engine repairs are available.

Anchorages

(277) A **special anchorage** is in the Chester River southeast of Chestertown. (See **110.1** and **110.72a,** chapter 2, for limits and regulations.)

(278) **Chestertown,** Mile 23.8W, is a county seat and has bus and rail transportation. Water commerce consists chiefly of barged petroleum products.

(279) The highway bridge over the river at Chestertown has a bascule span with a clearance of 12 feet. (See **117.1 through 117.59 and 117.551,** chapter 2, for drawbridge regulations.) The county wharf 0.1 mile below the bridge has depths of 5 feet reported alongside. The wharf at the marina 0.2 mile below the bridge has depths of 14 feet at the outer end and 6 feet at the inner face. Water, ice, electricity, gasoline, diesel fuel, slips, a 25-ton lift, a pump-out station, supplies, and some repairs are available.

(280) Between Chestertown and Crumpton the channel is very narrow in places. Though marked in the more critical places, it is difficult to navigate without local knowledge and is more easily followed at low water.

(281) **Morgan Creek,** Mile 25.7N, in 1979, had reported depths of 2 to 3 feet over the bar at the entrance and 2 to 5 feet for about 2 miles in a narrow crooked channel. The entrance is a narrow slough between flats almost awash at low water. A fixed highway bridge 0.6 mile above the entrance has a reported clearance of 6 feet. The overhead power cable close northward of the bridge has a clearance of 32 feet.

(282) A public wharf is at **Deep Landing,** Mile 30S. **Crumpton** is at Mile 32S. The highway bridge at the town has a 40-foot fixed span with a clearance of 14 feet. The overhead power cable on the east side of the bridge has a clearance of 28 feet.

(283) Above Crumpton, the channel in Chester River is difficult to follow without local knowledge, but navigation is possible to Jones Landing, at about Mile 37S.

(284) **Rock Hall Harbor,** north of the entrance to Chester River and 5 miles north-northeastward of Love Point Light, is the base for local fishing vessels and pleasure craft. The entrance channel leads north between converging breakwaters to two channels within the harbor. One channel leads to an anchorage basin at the west end

Rock Hall Harbor and Swan Creek, Maryland
Image courtesy of Waterway Images (2004)

of the harbor, thence eastward paralleling the waterfront at **Rock Hall** to a basin at the east end of the harbor. The Rock Hall waterfront is a 500-foot long bulkhead permitting overnight tie-up. No facilities are at the bulkhead. There is a boat ramp west of the bulkhead. The second channel leads northeast from inside the entrance and connects with the channel paralleling the waterfront. In 2010, the controlling depths were 4 feet in the entrance channel, thence 7 feet in the anchorage basin at the west end of the harbor and channel paralleling the waterfront, thence 7 feet in the basin at the east end of the harbor, thence 7.5 feet in the channel that runs northeast from the entrance to the waterfront. The approach to the harbor is marked by a buoy and lights and daybeacons mark the channels inside the harbor. A seasonal sound signal is at the light on the west side of the entrance.

Small-craft facilities

(285) Numerous small-craft facilities are in Rock Hall Harbor. Berthing, water, electricity, gasoline, diesel fuel, pump-out station, launching ramp, storage and marine supplies are available. Repairs can be made with a marine railway that can haul out craft up to 50 feet and lifts to 30 tons.

(286) **Swan Creek** is 1 mile northwestward of Rock Hall Harbor and 0.7 mile southeastward of **Swan Point,** which is 139 miles above the Virginia Capes. A poorly marked channel leads north, then east, to **Deep Landing**. Mariners should use caution when passing **Little Neck Island**, west the channel, as it reportedly is visible only at extreme low water. Private, seasonal buoys reportedly mark the 3.5-foot shoal 500 yards north of Light 6 and other shoal water in entrance of the creek. Mariners are advised to pass close to the private moorings on the south side of the channel as the water shoals quickly to the northwest.

(287) The shallow flats that extend 0.4 mile south-southeastward from Little Neck Island are marked by a buoy.

Small-craft facilities

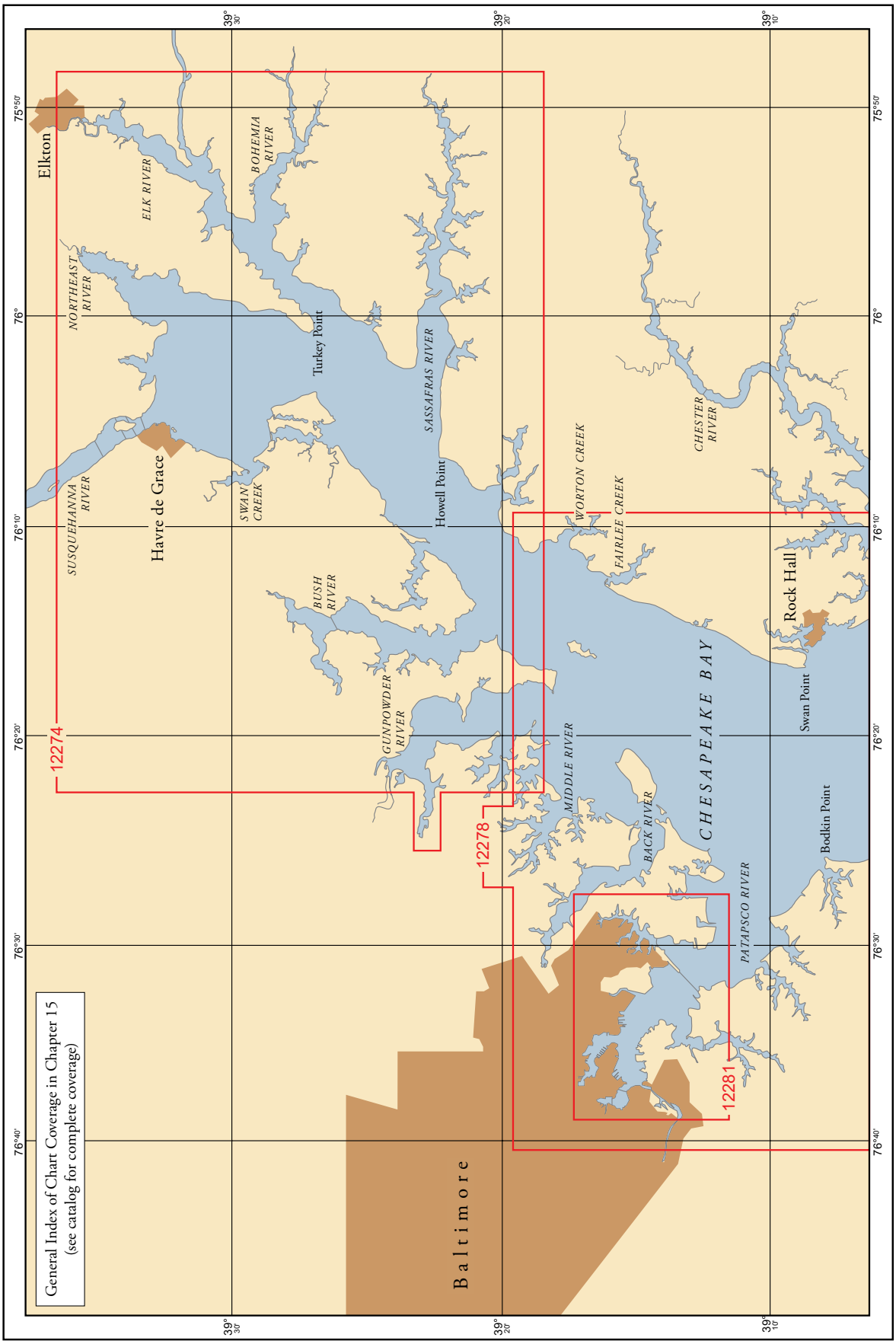
(288) Several small-craft facilities are at **Gratitude,** 0.5 mile above the entrance to Swan Creek. Transient berths, electricity, water, ice, gasoline, diesel fuel, pump-out station, storage, limited marine supplies, and lifts to 40 tons for marine repairs are available.

(289) The area in Swan Creek just north of **Deep Landing** and **The Haven,** a cove 0.5 mile east of Deep Landing, provides a good small-boat refuge in heavy weather.

(290) The eastern shore of Chesapeake Bay above Swan Point is described in Chapter 15.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12221	Fishermans Island, Chesapeake Bay	37°06'N/75°59'W	3.4	3.2	0.1
12221	Wolf Trap Light, Chesapeake Bay	37°23'N/76°11'W	1.8	1.7	0.1
12221	Tue Marshes Light, York River Entrance	37°14'N/76°23'W	2.5	2.3	0.1
12221	Old Point Comfort	37°00'N/76°19'W	2.8	2.6	0.1
12224	Sand Shoal Inlet, Cobb I. Coast Guard Station	37°18'N/75°47'W	4.5	4.2	0.2
12224	Cape Charles Harbor, Chesapeake Bay	37°16'N/76°01'W	2.7	2.4	0.1
12225	Watts Island, Chesapeake Bay	37°48'N/75°54'W	1.8	1.7	0.1
12226	Gaskins Point, Occohannock Creek	37°33'N/75°55'W	1.9	1.8	0.1
12226	Harborton, Pungoteague Creek	37°40'N/75°50'W	2.0	1.9	0.1
12228	Shelltown, Pocomoke River	37°59'N/75°38'W	2.7	2.5	0.1
12228	Crisfield, Little Annemessex River	37°59'N/75°52'W	2.1	2.0	0.1
12228	Ewell, Smith Island	38°00'N/76°02'W	1.8	1.6	0.1
12230	Sharkfin Shoal Light, Chesapeake Bay	38°12'N/75°59'W	2.5	2.3	0.1
12230	Point Lookout	38°02'N/76°19'W	1.5	1.4	0.2
12231	Great Shoals Light, Monie Bay	38°13'N/75°53'W	2.6	2.4	0.1
12231	Hooper Strait Light, Chesapeake Bay	38°14'N/76°05'W	1.7	1.6	0.1
12233	Piney Point, Potomac River	38°08'N/76°32'W	1.6	1.5	0.1
12233	Kinsale, Potomac River	38°02'N/76°35'W	1.4	1.3	0.1
12261	Salisbury, Wicomico River	38°22'N/75°36'W	3.5	3.2	0.1
12261	Vienna, Nanticoke River	38°29'N/75°49'W	2.3	2.1	0.2
12263	St. Michaels, Miles River	38°47'N/76°13'W	1.9	1.7	0.3
12263	Kent Island Narrows, Eastern Bay	38°58'N/76°15'W	1.8	1.5	0.3
12263	Chesapeake Beach, Chesapeake Bay	38°41'N/76°32'W	1.5	1.2	0.2
12263	Cove Point	38°24'N/76°24'W	1.4	1.1	0.1
12263	Cambridge, Choptank River	38°34'N/76°04'W	2.0	1.8	0.2
12263	Annapolis, U.S. Naval Academy	38°59'N/76°29'W	1.4	1.2	0.2
12264	Broomes Island, Patuxent River	38°25'N/76°33'W	2.0	1.6	0.3
12264	Benedict, Patuxent River	38°31'N/76°40'W	2.4	2.0	0.4
12266	St. Michaels, San Domingo Creek	38°47'N/76°14'W	2.1	1.7	0.3
12266	Cambridge, Choptank River	38°34'N/76°04'W	2.0	1.8	0.2
12270	Thomas Point Shoal Light, Chesapeake Bay	38°54'N/76°26'W	1.4	1.1	0.2
12272	Love Point, Chester River	39°02'N/76°18'W	1.7	1.4	0.2
12272	Queenstown, Chester River	39°00'N/76°10'W	2.0	1.6	0.3
12272	Cliffs Wharf, Chester River	39°07'N/76°08'W	2.1	1.8	0.3
12272	Chestertown, Chester River	39°12'N/76°04'W	2.7	2.2	0.4
12272	Crumpton, Chester River	39°15'N/75°56'W	2.8	2.5	0.2
12272	Deep Landing, Swan Creek	38°09'N/76°16'W	1.6	1.3	0.2
12273	Town Point Wharf, Elk River	39°30'N/75°55'W	2.7	2.4	0.2
12273	Havre de Grace, Susquehanna River	39°32'N/76°05'W	2.5	2.1	0.2
12273	Baltimore, Ft. McHenry	39°16'N/76°35'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 November 2011


General Index of Chart Coverage in Chapter 15
(see catalog for complete coverage)
Elkton
ELK RIVER
BOHEMIA RIVER
NORTHEAST RIVER
SUSQUEHANNA RIVER
Havre de Grace
SWAN CREEK
Turkey Point
SASSAFRAS RIVER
Howell Point
BUSH RIVER
GUNPOWDER RIVER
WORTON CREEK
FAIRLEE CREEK
CHESTER RIVER
Rock Hall
Swan Point
Bodkin Point
MIDDLE RIVER
BACK RIVER
CHESAPEAKE BAY
PATAPSCO RIVER
Baltimore
12274
12278
12281
39° 30'
39° 20'
39° 10'
75°50'
76°
76°10'
76°20'
76°30'
76°40'

Baltimore to Head of Chesapeake Bay

(1) This chapter describes the northern part of Chesapeake Bay and the many tributaries that empty into it, including the more important Patapsco, Elk, and Susquehanna Rivers. Also described is the major port of Baltimore and several smaller ports and landings in this part of the bay.

COLREGS Demarcation Lines

(2) The lines established for Chesapeake Bay are described in **80.510,** chapter 2.

Chart 12273

(3) Patapsco River forms Baltimore Harbor, and Elk River is the approach to the Chesapeake and Delaware Canal. The other tributaries that empty into this part of the bay are seldom used by vessels drawing more than 12 feet. The shores are mostly wooded in the undeveloped areas and rise to considerable heights in the vicinity of Northeast and Susquehanna Rivers.

(4) There are extensive shoal areas in the upper part of the bay, and **fishtraps** are numerous in season; fishtrap limits are shown on the chart. All of the tributaries are usually closed by ice for extended periods during the winter.

Chart 12278

(5) Sandy Point Shoal Light and Baltimore Light, respectively 131.5 and 134.2 miles above the Virginia Capes, were described in chapter 13. The channel to Baltimore and the channel to the head of Chesapeake Bay divide at 0.5 mile eastward of Sandy Point Shoal Light.

(6) **Sevenfoot Knoll Light** (39°09'19"N., 76°24'33"W.), 58 feet above the water, is shown from a skeleton tower on the northeast side of the channel to Baltimore, 140.1 miles from the Capes.

(7) **Caution**–Large vessels transiting Craighill Channel Upper Range and Brewerton Channel Eastern Extension in the vicinity of Sevenfoot Knoll Light may generate large and dangerous wakes; waves as high as 10 to 12 feet have been reported. Small craft in the area are advised to use extreme caution.

(8) **Baltimore Harbor** consists of the entire Patapsco River and its tributaries; a part of the waterfront thus included lies outside the municipal limits of Baltimore, but by State law is within the jurisdiction of the Maryland Port Administration.

(9) **Patapsco River** joins the west side of Chesapeake Bay between Bodkin Point and **North Point,** 4 miles to the northward; the midchannel point in the entrance, 2 miles northwest of Sevenfoot Knoll Light, is 142.1 miles above the Virginia Capes, and 54 miles from Delaware River by way of the Chesapeake and Delaware Canal.

Channels

(10) Federal project depths are: 50 feet in the main channel between the Virginia Capes and Fort McHenry, Baltimore; thence 42 feet in Ferry Bar Channel (east section); thence 49 feet in Northwest Harbor East Channel and turning basin; thence 40 feet in Northwest Harbor West Channel and turning basin; and 50 feet in Curtis Bay Channel. The Federal project in the main channel between the Delaware Capes and Baltimore via the Chesapeake and Delaware Canal is 35 feet.

(11) The channels are maintained at or near project depths. (See Notice to Mariners and latest editions of the charts for controlling depths.)

(12) **Bodkin Point** is the low northeastern extremity of **Bodkin Neck,** on the south side of the entrance to Patapsco River. Shoals extend northward and eastward from the point to the edge of the main channel.

(13) **Bodkin Creek,** which flows into Patapsco River along the inner side of Bodkin Neck, has depths of 9 feet in the approaches and 7 to 9 feet for considerable distances into its branches. The channel is very narrow at the mouth and leads between extensive shoals. Shoaling to 3 feet is reported in the entrance to the creek between Daybeacon 9 and Light 11; mariners are urged to use caution in this area.

(14) **Back Creek** is on the northeast side of Bodkin Creek just inside the mouth. A boatyard is in the upper part of the creek. Gasoline and slips are available. Hull and engine repairs can be made; marine railway, 50 tons; lift, 5 tons.

(15) **Main Creek** is separated from Back Creek by **Spit Neck.** Both branches have depths of 7 to 9 feet almost to their heads and are much used by pleasure craft.

(16) Several marinas are on **Graveyard Point,** on the south side of Main Creek 0.2 mile above the mouth. Gasoline, diesel fuel, slips, and some marine supplies can be obtained. Hull and engine repairs can be made. Largest haul-out capacities are: railway, 55 feet; lift, 5 tons.

(17) A marina at the entrance to **Perry Cove,** 1.3 miles above the mouth of Main Creek, has gasoline and some

marine supplies. Hull and engine repairs can be made; lift, 30 tons.

(18) **Rock Point** is on the southwest side of Patapsco River 3 miles above Bodkin Point. Back of Rock Point is an elevated water tank, and a pier extends out from the Rock Creek side to depths of 5 feet or more. **White Rocks,** 0.6 mile northwest of Rock Point, are about 15 feet high and marked by a light; the deepest water is north and west of the rocks.

(19) A **130°–310°** measured course, 1,000 yards long, is 1 mile eastward of Rock Point (39°10.0'N., 76°28.7'W.). The course is marked by private seasonal buoys.

(20) **Rock Creek,** on the northwest side of Rock Point, has depths of 11 feet almost to the head. It is marked; a light on the east side marks the narrow part of the channel off **Fairview,** 0.5 mile above the mouth.

(21) **Wall Cove** empties into the southeast side of Rock Creek along the south side of Fairview. In 1991, centerline controlling depths of about 10 feet were reported available for most of its length but gradual shoaling to about 5 feet had occurred near the head of the cove. The Maryland Yacht Club piers on the Fairview side of the entrance have depths of about 13 feet at their outer ends.

(22) There are several marinas and boatyards in Wall Cove and along Rock Creek where marine supplies, gasoline, diesel fuel, pump-out station, launching ramp, storage, water and ice can be obtained. Largest haul-out capacities for hull and engine repairs are: marine railway, 60 feet; lift, 50 tons.

(23) **Stony Creek,** on the southwest side of Patapsco River 5 miles above Bodkin Point, has depths of 12 feet or more almost to the head. The channel along the west side of the entrance is about 70 yards wide and marked by a light and buoys; the east side is obstructed by rocks, some of which bare at all stages of the tide. The State Route 173 highway bridge 0.8 mile above the mouth of Stony Creek has a 40-foot bascule span with a clearance of 18 feet. The bridgetender monitors VHF–FM channel 16 and works on channels 13 and 68; call sign KAJ–667. (See **117.1 through 117.59 and 117.573,** chapter 2, for drawbridge regulations.) A marina on the north side just above the bridge has gasoline.

(24) **Nabbs Creek,** a tributary on the northwest side of Stony Creek, 1 mile above the mouth, has depths of 12 feet almost to the head. A marina near the head of the creek has gasoline, diesel fuel, berths, and marine supplies. Hull and engine repairs can be made. A marine railway can handle craft up to 60 feet; a 15-ton lift is available.

(25) **Back Cove,** on the north side of Nabbs Creek near the mouth, has depths of 12 feet to a boatyard 0.3 mile above the entrance. The marine railway can handle craft up to 60 feet for hull and engine repairs; gasoline is available.

(26) **Old Road Bay,** which empties into the north side of Patapsco River along the west side of North Point, has general depths of 7 to 12 feet. A rock with a depth of 1 foot is about 1.1 miles northwest of North Point; a light marks the edge of a shoal that extends westward from North Point; a light 0.25 mile off the north shore of the bay marks a shoal that extends 0.5 mile from the west shore. Mariners are advised to exercise caution in this area.

(27) **North Point Creek** and **Jones Creek,** which empty into the northeast and northwest corners of Old Road Bay, respectively, have depths of 4 to 6 feet. Approach both creeks by passing eastward of the light off the north shore of the bay, being careful to avoid the reported underwater obstruction about 150 yards south of the light. Small-craft facilities are in both creeks.

Charts 12281, 12278

(28) **Baltimore**, one of the major ports of the United States, is at the head of tidewater navigation on Patapsco River. The midharbor point, at the intersection of Fort McHenry and Ferry Bar Channels 0.6 mile southeast of Fort McHenry, is 8 miles from the mouth of the river, 150 miles above the Virginia Capes, and 62 miles from Delaware River.

(29) Principal imports are: general cargo, petroleum products, coke of coal, iron ore, aluminum manganese, inorganic chemicals, salt, gypsum, lumber, motor vehicles, fertilizers and sugar; exports are chiefly: general cargo, coal, automobiles and machinery. Coastwise receipts include: petroleum products, sand, cement, fertilizers, sulfur, sugar and lumber; shipments are petroleum and metal products.

Channels

(30) Federal project channels were discussed at the beginning of the chapter. The branch channels will be covered in the descriptions of the tributaries.

Anchorages

(31) General, dead ship, and small-craft anchorages are in Baltimore Harbor. (See **110.1 and 110.158,** chapter 2, for limits and regulations.)

Tides and currents

(32) Prolonged winds of constant direction may cause substantial variation in the tide. Currents in the harbor are 0.8 knot on the flood and ebb. (See the Tidal Current Tables for daily predictions.) In 1981, strong currents were reported in the vicinity of Fort Carroll and Brewerton Angle on the change of tides.

Weather

(33) Baltimore is in a region about midway between the rigorous climates of the North and the mild climates of the South and adjacent to the modifying influences of the Chesapeake Bay and Atlantic Ocean to the east and the Appalachian Mountains to the west. The net effect is

Baltimore Harbor, Maryland
Image courtesy of Waterway Images (2006)

to produce a more equable climate compared to inland locations of the same latitude.

(34) Rainfall distribution throughout the year is rather uniform; however, the greatest intensities are confined to the summer and early fall, the season for hurricanes and severe thunderstorms. Rainfall during this period occurs principally in the form of thundershowers, and rainfall totals during these months vary appreciably, depending on the number of thundershowers which occur largely by chance in a given locality. Hurricane force winds, however, may occur on rare occasions due to a severe cold front or a severe thunderstorm. The greatest damage by hurricanes is that produced along waterfronts and shores by the high tides and waves.

(35) In summer, the area is under the influence of the large semipermanent high-pressure system commonly known as the Bermuda High and centered over the Atlantic Ocean near latitude 30°N. This high-pressure system brings a circulation of warm, humid air masses over the area from the deep South. The proximity of large water areas and the inflow of southerly winds contribute to high relative humidities during much of the year.

(36) January is the coldest month, and July, the warmest. Winter and spring have the highest average windspeeds. Snowfall occurs on about 25 days per year on the average; however, an average of only 9 days annually produce snowfalls greater than 1.0 inch. Although heaviest amounts of snow generally fall in February, occasional heavy falls occur as late as March. Records for the period, August 1950 through December 1967, indicate that the average date of the last temperature as low as 32° in the spring is April 15, while the average date of the first temperature as low as 32° in the autumn is October 26.

(37) Glaze or freezing rain occurs on an average of two to three times per year, generally in January or February. However, some occurrences have been noted in November and December. Some years pass without the occurrence of freezing rain, while in others it occurs on as many as 8 to 10 days. Sleet is observed on about 5 days annually. The sleet season begins as early as November in some years, and ends as late as March in some cases, with the greatest frequency of occurrence in January.

(38) The National Weather Service office is at Baltimore-Washington International Airport, about 7 miles southward of Baltimore. **Barometers** may be compared there or by telephone. (See Appendix B for **Baltimore climatological table.)**

(39) **Fogs** occur chiefly from October to March, inclusive. From April to September there are only a few days with dense fogs. Very light winds clear the fog away.

Ice

(40) Baltimore Harbor is frozen over during severe winters, but the ice-breakers and the larger power-driven vessels keep the dredged channels open so that self-propelled vessels seldom have difficulty in entering the harbor. Ice conditions in the main channel are most

severe in the vicinity of Sevenfoot Knoll Light, where ice moving from the northern end of Chesapeake Bay tends to collect in packs. Navigation from Baltimore to the upper end of the bay and the Chesapeake and Delaware Canal is likely to be interrupted by ice for short periods during an average winter.

(41) During the ice navigation season, the waters described in this chapter are a **regulated navigation area.** (See **165.503,** chapter 2, for limits and regulations.)

Pilotage, Baltimore

(42) Pilotage is compulsory for all foreign vessels and for U.S. vessels under register in the foreign trade bound to or from the port of Baltimore. Pilotage is optional for U.S. vessels under enrollment in the coastwise trade who have on board a pilot licensed by the Federal Government for these waters.

(43) The Association of Maryland Pilots has an office in Baltimore (telephone: 410–276–1337, fax: 410–276–364, telex: 87–574 MARPILOTS BALTIMORE, cable address: MARPILOT BALTIMORE). They provide service to any port in Maryland and service between Baltimore and the entrance of the Chesapeake Bay at Cape Henry, VA. The pilot office also monitors VHF–FM channel 11.

(44) The Chesapeake and Interstate Pilots Association offers pilot services to U.S. vessels, engaged in the coastwise trade, and public vessels to or from Baltimore, via the Chesapeake Bay if the vessel is entering from sea at Cape Henry or transiting between any port or place on the Chesapeake Bay and its tributaries. Pilot service is also offered to vessels to or from Baltimore that are transiting the Chesapeake and Delaware Canal. Pilots will meet vessels upon prior arrangement at Cape Henlopen or any port or place on the Delaware Bay and River, at Cape Henry or any port or place on the Chesapeake Bay and its tributaries. Pilots will also provide all pilot services required from the port of departure to the port of arrival. Arrangements for pilots may be made through the ships' agents or the pilot office in Norfolk (telephone, 757–855–2733).

(45) Interport Pilots Agency, Inc. offers pilotage to public vessels and private vessels in the coastal trade operating between Baltimore Harbor and many northeast ports via the Chesapeake and Delaware Canal. The 24 hour telephone number is 732–787–5554 and the e-mail address is: interport@verizon.net. Additional information about Interport Pilots can be obtained at http://www.interportpilots.com.

(46) Pilotage information for incoming vessels is given in chapters 6, 7, and 9.

Towage

(47) Tugs up to 3,800 hp are available at all times to assist vessels arriving or departing, in docking or undocking, and in shifting within the harbor. Long-distance towage is also available. Tug services are usually arranged far in advance through ships' agents.

Quarantine, customs, immigration, and agricultural quarantine

(48) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(49) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(50) Baltimore is a **customs port of entry.**

Harbor regulations

(51) The Maryland Port Administration has general jurisdiction over the physical operation of Baltimore Harbor and issues rules and regulations pertaining to the use of the public wharves and piers. The Port Administration office is at the World Trade Center Baltimore, Baltimore, MD 21202.

Wharves

(52) Baltimore has more than 200 piers and wharves at Locust Point, Port Covington, Fairfield, Curtis Bay, Hawkins Point, Sparrows Point, Dundalk, Lower Canton, Canton, Lazaretto Point, and in the Inner Harbor. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 10, published and sold by the U.S. Army Corps of Engineers. (See Appendix A for address.) The alongside depths for the facilities described are reported depths. (For information of the latest depths contact the Maryland Port Administration or the private operator.) All of the facilities have direct highway connections, and most have railroad connections. Water and electrical shore-power connections are available at most piers and wharves.

(53) General cargo at the port is usually handled by ship's tackle; special handling equipment, if available, is mentioned in the description of the particular facility. There are 22 traveling, container cranes with lift capacities from 27.5 to 50 long tons and 5 full-portal gantry cranes with lift capacities up to 100 tons at the Port of Baltimore. Numerous warehouses and cold storage facilities adjacent to the waterfront are available. Several municipal piers, administered by the city harbormaster whose office is on Municipal Pier 4, are used mainly by coastwise vessels.

Facilities at Locust Point:

(54) **Tate & Lyle North American Sugars, Baltimore Refinery, Raw Sugar Dock** (39°16'31"N., 76°36'44"W.): 1,040 feet of berthing space with dolphins; 38 feet alongside; deck height, 7 feet; 12-ton buckets and 40-inch conveyor belt, unloading rate, 300 tons per hour; receipt of bulk raw sugar; mooring vessels; owned and operated by Tate & Lyle North American Sugars, Inc.

(55) **Maryland Port Administration, North Locust** Point Terminal, Piers 10 through 3:

(56) Pier 10 (39°16'30"N., 76°35'19"W.): 580 feet of berthing space; 31 to 34 feet alongside; deck height, 11 feet; receipt of molasses and liquid latex by vessel and

barge; owned by Maryland Port Administration and operated by Westway Terminal Co., Inc. and Ennar Latex, Inc.

(57) Pier 7 (39°16'23"N., 76°35'08"W.): east side 1,000 feet long; west side 820 feet long; face 50 feet long; 40 feet alongside; deck height, 10 feet; grain elevator with 3.2-million-bushel capacity, four conveyor booms with 60,000 bushel per hour loading rate, trackage serving three loading spouts; shipment of grain by vessel and occasional receipt and shipment by barge; owned and operated by AM/Countrymark, Inc.

(58) Piers 4 and 5 (39°16'18"N., 76°34'57"W.): 375-foot face, east and west sides 1,200 feet long; 35 to 34 feet alongside; deck height, 9 feet; 130,000 square feet covered storage, 30 acres open storage, storage tanks with 1.46 million gallon total capacity; two traveling revolving gantry cranes to 87 tons, pipelines; receipt of paper products and liquid latex; receipt and shipment of conventional general cargo; owned by Maryland Port Administration and operated by Balterm (Baltimore Forest Products Terminals); Guthrie Latex, Inc.; and Firestone Tire & Rubber Co., Natural Latex Division.

(59) Pier 3 (39°16'15"N., 76°34'52"W.): 270-foot face, 35 to 38 feet alongside, deck heights, 5 and 9 feet; west side 1,212 feet long, 34 to 38 feet alongside, deck height, 9 feet; east side 1,230 feet long, 18 to 33 feet alongside, deck height, 5 feet; 137,000 square feet covered storage; receipt and shipment of paper products and liquid latex; receipt and shipment of conventional general cargo; owned by Maryland Port Administration and operated by Balterm (Baltimore Forest Products Terminals) and Firestone Tire & Rubber Co., Natural Latex Division.

(60) **Maryland Port Administration, South Locust Point Marine Terminal**, Berth No. 9; (39°15'50"N., 76°35'54"W.): 1,139-foot face; 35 feet alongside; deck height, 9 feet; 273,000 square feet covered storage; 8.5 acres open storage; mooring vessels for storage; owned and operated by Maryland Port Administration.

(61) **Maryland Port Administration, South Locust Point Marine Terminal**, Berths 10, 11 and 12 (39°15'43"N., 76°35'34"W.): 2,050-foot face; 36 feet alongside; deck height, 9 feet; three 40-ton traveling container cranes, 100-ton traveling gantry crane; 28 acres of open container storage; receipt and shipment of conventional, containerized, and roll-on/roll-off general cargo; receipt and shipment of machinery and steel products in foreign and domestic trade; owned by Maryland Port Administration; operated by International Terminal Operating Corp. of Baltimore.

Facilities at Fairfield:

(62) **Hobelmann Port Services, Baltimore Terminal Pier** (39°14'57"N., 76°34'36"W.): west side, 825 feet of berthing space with dolphins; 34 feet alongside; east side, 575 feet of berthing space; 32 feet alongside; deck height, 6 feet; 53 acres open storage; receipt and shipment of automobiles and roll-on/roll-off general cargo; owned by Hobelmann Port Services, Inc., and operated by Atlantic Venture, Inc.

(63) **ST Services, Baltimore Terminal Pier** (39°14'57"N., 76°34'23"W.): 1,110 feet of berthing space with platform; 33 feet alongside; deck height 10.2 feet; 49 storage tanks, capacity 34.48-million-gallons; receipt and shipment of miscellaneous bulk liquid commodities; owned and operated by ST Services, Inc.

(64) **Liquid Transfer Terminal, Front Wharf** (39°14'24"N., 76°33'53"W.): 582 feet with dolphins; 30 feet alongside; deck height, 6 feet; receipt of liquid latex, asphalt, and petroleum products; owned by Liquid Transfer Terminal, Inc., and operated by Liquid Transfer Terminal, Inc., Chevron Products Co., and Stratus Petroleum Corp.

(65) **Condea Vista Co. Pier** (39°14'27"N., 76°33'45"W.): 600 feet of berthing space; 30 feet alongside; deck height, 9 feet; receipt and shipment of miscellaneous liquid chemicals, including paraffin, benzene, and alkalates; receipt of fuel oil; owned and operated by Condea Vista Co., Inc.

Facilities in Curtis Bay:

(66) **Citgo/Tosco, Baltimore Pier** (39°13'30"N., 76°34'02"W.): west side, 435 feet long with dolphins; 23 feet alongside; deck height, 8 feet; receipt and shipment of petroleum products by vessel and barge; owned and operated by Citgo Petroleum Corp., and Tosco Refining Corp.

(67) **CSX Transportation, Chesapeake Bay Ore Pier** (39°13'33"N., 76°34'51"W.): 800 feet of berthing space with dolphins; 40 feet alongside; deck height, 8 feet; two electric gantry cranes with 100-ton receiving hoppers; conveyor belt to 600-ton receiving hopper, unloading capacity 2,000 tons per hour; receipt and shipment of miscellaneous bulk materials, including ore, salt, fertilizer, and stone in foreign and domestic trades; owned and operated by CSX Transportation, Inc.

(68) **CSX Transportation, Chesapeake Bay Coal Pier** (39°13'23"N., 76°34'36"W.): north side 900 feet long, 30 feet alongside; south side 900 feet long, 42 feet alongside; deck height, 8 feet; north side, conveyor loading system, loading capacities 4,000 ton per hour; south side, 6,000 tons per hour; shipment of coal and stone by barge and vessel; owned and operated by CSX Transportation, Inc.

(69) **CSX Transportation, Chesapeake Bay Shiploader No. 2 Pier** (39°13'16"N., 76°34'34"W.): north and south sides 909 feet long; 50 feet alongside; deck height, 9.5 feet; 6,000-ton-per-hour loading tower; shipment of coal by barge and vessel; owned and operated by CSX Transportation, Inc.

(70) **General Chemical, Main Wharf** (39°12'57"N., 76°34'56"W.): 800 feet of berthing space with dolphins; 26 feet alongside; deck height, 7 feet; receipt of asphalt, sulfuric acid, and potash; owned by Olin Corp., Olin Chemicals Group and operated by Olin Corp. and General Chemical.

(71) **Amerada Hess Corp., Baltimore Terminal Pier** (39°12'46"N., 76°34'48"W.): north side 700 feet long with dolphins; south side 500 feet long with dolphins; 24 to 35 feet alongside; deck height, 6 feet; receipt and shipment of petroleum products, bunkering tankers berthed at pier, loading barges for bunkering vessels at berth in harbor; owned and operated by Amerada Hess Corp.

(72) **Amoco Oil Co., Curtis Bay Terminal Dock** (39°12'37"N., 76°34'54"W.): 285-foot face with dolphins; 35 feet alongside; deck height, 6 feet; receipt and occasional shipment of petroleum products by barge and small tanker; owned by Amoco Oil Co. and Bitumar USA, Inc., and operated by Amoco Oil Co.

(73) **W.R. Grace & Co.-Conn., Caustic Soda and Sulfuric Acid Pier** (39°12'56"N., 76°34'26"W.): south side 425 feet of berthing space with dolphins; 28 feet alongside; deck height, 8 feet; receipt and shipment of 50% sodium hydroxide solution hydroxide solution and sulfuric acid; owned and operated by W.R. Grace and Co.-Conn., Grace Davison Division.

(74) **U.S. Gypsum Co., Baltimore Plant Dock** (39°13'07"N., 76°33'18"W.): south platform 740 feet with dolphins; 32 feet alongside; deck height, 11 feet; 42-inch conveyor belt; receipt of gypsum rock and aragonite sand by self-unloading vessel; owned and operated by U.S. Gypsum Co.

Facilities at Hawkins Point:

(75) **Eastalco Aluminum Co., Hawkins Point Pier** (39°12'50"N., 76°32'22"W.): north and south sides 720 feet long; 36 to 39 feet alongside; deck height, 9 feet; 30-ton-traveling gantry crane, unloading rate 550 tons per hour; 64,000 ton aluminum storage silos; 3.64-million-gallon liquid fertilizer storage tanks; receipt of alumina, liquid fertilizer, and cement; owned by Maryland Port Administration and operated by Eastalco Aluminum Co., Transmaryland Terminal Corp., and St. Lawrence Cement CO.

Facilities at Sparrows Point:

(76) **Bethlehem Steel Corp., Sparrows Point Plant, Ore Pier** (39°12'11"N., 76°28'55"W.): 1,153 feet long with dolphins; 42 feet alongside; deck height,15 feet; conveyor system, three unloading towers unload 1,500 tons per hour; receipt of miscellaneous bulk materials, including pelletized ore, coke, and olivine; owned and operated by Bethlehem Corp.

(77) **Bethlehem Steel Corp., Pennwood Wharf** (39°12'40"N., 76°27'42"W.): 870 feet long; 24 feet alongside; deck height, 12 feet; two 25-ton electric bridge cranes; 50,500 square feet of covered storage; occasional shipment of steel and steel products, occasional receipt of construction materials and general cargo; owned and operated by Bethlehem Steel Corp.

Facilities at Dundalk:

(78) **Dundalk Marine Terminal, Berths Nos. 1-13** (39°14'42"N., 76°32'20"W.): deck heights, 9 to 9.63 feet; cranes to 60-ton capacity; 240,000 square feet covered storage, 570 acres open storage; receipt and shipment of containerized and roll-on/roll-off general cargo in foreign and domestic trade; receipt and shipment of general cargo in foreign and domestic trade, receipt of molasses, automobiles; boarding passengers, mooring cruise vessels; owned by Maryland Port Administration and operated Maryland Port Administration and PM Ag Products, Inc.

(79) Berths 1–6; face, 3,830 feet long; 34 feet alongside.

(80) Berths 7–10 face; 2,825 feet long; 34 feet alongside.

(81) Berths 11–13; face 2,875 feet long; 42 feet alongside.

Facilities at Lower Canton:

(82) **Seagirt Marine Terminal, Barge Berth** (39°15'33"N., 76°33'00"W.): face 700 feet long; 32 feet alongside; roll-on/roll-off wharf 300 feet long; 30 feet alongside; deck height, 9 feet; 27.5-ton traveling container crane; 34,200 square feet of covered storage; 150 acres of open storage; receipt and shipment of containerized and roll-on/roll-off cargo by barge; owned and operated by Maryland Port Administration.

(83) **National Gypsum Co., Baltimore Plant Wharf** (39°15'36"N., 76°33'16"W.): face 459 feet long; 32 feet alongside; deck height, 8 feet; conveyors unload 300 tons per hour; receipt of gypsum rock by self-unloading vessel; owned and operated by National Gypsum Co.

(84) **Canton Marine Terminal, Pier No. 13** (39°15'27"N., 76°33'21"W.): east side 690 feet long, 39 feet alongside; west side 1,418 feet long; 28 feet alongside; deck heights, 12 and 8 feet; 1.3 acres of open storage; receipt and shipment of roll-on/roll-off and conventional general cargo by vessel and barge; mooring vessels and barges; owned and operated by Canton Marine Terminal.

(85) **Consolidation Coal Sales Co., Pier No. 11** (39°15'29"N., 76°33'32"W.): face 1,623 feet long; 32 feet alongside; deck height, 8 feet; 102,600 square feet of covered storage; mooring floating equipment; mooring hospital ship USNS Comfort; owned by Consolidated Coal Sales Co. and operated by Sadowski Towing Co., Inc. and Consolidation Coal Sales Co.

(86) **Consolidation Coal Sales Co., Per No. 10** (39°15'29"N., 76°33'37"W.): face 1,485 feet long; 30 to 32 feet alongside; deck height, 8 feet; mooring floating equipment; owned by Consolidated Coal Sales Co. and operated by Vane Brothers Co.

(87) **Great Lakes Dredge & Dock Co. Pier No. 6** (39°15'30"N., 76°33'42"W.): east side 1,069 feet long ; 32 feet alongside; west side 927 feet long; 20 to 30 feet alongside; deck height, 8 feet; 38,100 square feet covered storage; occasional receipt and shipment of general cargo; mooring miscellaneous vessels; west side: mooring dredges and other floating equipment; owned by

Consolidated Coal Sales Co. and operated by Great Lakes Dredge & Dock Co. and Consolidated Coal Sales Co.

(88) **Consolidation Coal Sales Co., Piers Nos. 4 and 5** (39°15'31"N., 76°33'46"W.): face 837 feet long; 20 to 30 feet alongside; deck height, 6 feet; 32,000 square feet covered storage; mooring coal barges; occasional receipt and shipment of general cargo; owned and operated by Consolidation Coal Sales Co.

(89) **Consolidation Coal Sales Co., Pier No. 3** (39°15'23"N., 76°33'48"W.): east side 818 feet long; west side 859 feet long; 35 feet alongside; deck height, 8 feet; 87,000 square feet of covered storage; occasional mooring of coal barges; owned and operated by Consolidation Coal Sales Co.

(90) **Consolidation Coal Sales Co., Pier No. 2:** east side 802 feet long; 27 feet alongside; west side 1,253 feet long; 42 to 50 feet alongside, deck height, 6 feet; conveyor system loads 7,000 tons per hour; shipment of coal by barge and vessel; owned and operated by Consolidation Coal Sales Co.

Facilities at Lazaretto Point:

(91) **Rukert Terminals Corp., Lazaretto Depot, Berths A and B** (39°15'36"N., 76°34'12"W.): Berths B 575 feet long, 34 feet alongside; Berth A 525 feet long, 35 feet alongside; deck height, 9 feet; 25,000 square feet covered storage; receipt and shipment of conventional and roll-on/roll-off general cargo in foreign and domestic trade; receipt of cement; owned and operated by Rukert Terminals Corp.

(92) **Rukert Terminals Corp., Agrico Pier** (39°15'52"N., 76°34'18"W.): 450 feet of berthing space with dolphin; 30 feet alongside; deck height, 8 feet; mooring vessels; owned and operated by Rukert Terminals Corp.

Facilities at Canton:

(93) **Rukert Terminals Corps., Pier No. 5** (39°16'01"N., 76°34'22"W): north side 870 feet long; 36 feet alongside; deck height, 7.3 feet; 20 acres open storage area handling 40,000 tons; receipt and occasional shipment of general cargo in foreign domestic trade and of dry bulk commodities, including potash, salt, gypsum rock, and ferroalloys; owned and operated by Rukert Terminals Corp.

(94) **Clinton Street Marine Terminal Pier No. 1** (39°16'05"N., 76°34'22"W.): 223-foot face; 32 feet alongside; north and south sides 1,100 feet long, 40 to 50 feet alongside; deck height, 10 feet; 252,000 square feet covered storage; mooring harbor tugs and ships in storage; owned by Maryland Port Administration and operated by McAllister Towing of Baltimore, Inc. and Keystone Ship Berthing, Inc.

(95) **Petroleum Fuel and Terminal Co. Baltimore Barge Dock** (39°16'19"N., 76°34'19"W.): north side 453 feet long; south side 400 feet long; 25 to 27 feet alongside; deck height, 8 feet; receipt and shipment of petroleum products by barge; owned and operated by Petroleum Fuel and Terminal Co., Subsidiary of Apex Oil Co.

(96) **Petroleum Fuel and Terminal Co. Baltimore Tanker Dock** (39°16'23"N., 76°34'20"W.): 260 feet of berthing space with dolphins, 40 feet alongside; deck height, 5 feet; receipt and occasional shipment of petroleum products by vessel and barge; owned and operated by Petroleum Fuel and Terminal Co., Subsidiary of Apex Oil Co.

Facilities on Northwest Harbor:

(97) **Broadway Recreation Pier** (39°16'49"N., 76°35'32"W.): face 150 feet of berthing space, 25 feet alongside; sides 500 feet of berthing space; 16 to 25 feet alongside; deck height, 4 to 5 feet; mooring harbor tugs; owned by City of Baltimore and operated by Moran Towing of Maryland, Inc.

Supplies

(98) Marine supplies of all kinds are available in the Port of Baltimore. All grades of heavy marine bunker fuel, lubricants, and diesel oil can be obtained. Vessels may bunker directly at marine oil terminals or may be serviced by barge at anchor. Most of the piers and wharves described have water and shore power connections. Water can also be delivered by waterboat anywhere in the harbor.

Repairs

(99) Baltimore is well equipped to make major repairs to large vessels. The largest graving dock in the area is at Bethlehem Steel Sparrows Point yard; it is 1,200 feet long, 198 feet wide, and has a depth of 23 feet over the blocks. The largest floating drydock in the area is at Bethlehem Steel Sparrows Point yard; it has a lifting capacity of 44,000 tons, is 882 feet long and 135 feet wide, and has 25 feet of water over the blocks.

(100) Marine railways can haul out vessels up to 125 feet and up to 300 tons.

(101) Shafts of any size required can be produced in the port. Several smaller repair facilities along the tributaries cater to yachtsmen and small-boat operators.

(102) Baltimore has extensive facilities for wrecking and salvage. In addition to equipment especially designed for salvage operations, there are heavy hoisting facilities which, though primarily designed for private industrial purposes, are available in case of need.

Communications

(103) Nearly all the piers and wharves in Baltimore Harbor are near the center of the city, and all are connected to it by wide paved streets. Most of the piers and wharves have direct connections with mainline railroads whose tracks are connected with all parts of the port area.

(104) The Port of Baltimore is served by many Class I railroads. The Canton Railroad is a terminal line that operates about 35 miles of track in the port area and connects with the major railroads.

(105) More than 100 shipping companies connect Baltimore with principal U.S. and foreign ports by regular

Patapsco River (Francis Scott Key Bridge), Maryland
Image courtesy of Waterway Images (2006)

sailings in the overseas, coastwise, and intercoastal trades. About 150 truck carriers service the port.

(106) Several major airlines provide frequent scheduled services between **Baltimore–Washington International Thurgood Marshall Airport,** inland about 7 miles southwestward of Fort McHenry, and domestic and overseas points.

(107) The **Baltimore Maritime Exchange,** located at the Maritime Center, provides to its members information concerning ship movements, local harbor conditions, weather data, and various other services; the Exchange operates on VHF-FM channel 11 from 0400 to 1900, call sign WHX 654. Members are requested to contact the Association of Maryland Pilots on VHF–FM channel 11 at other than previously mentioned times; call sign KMC 290.

(108) **Sparrows Point,** on the northeast side of Patapsco River 3 miles above the mouth, is the site of the Bethlehem Steel Corp. steel and shipbuilding plants. The two marked channels on the south side of Sparrows Point lead from the main channel in Baltimore Harbor to the ore-handling wharves; the easterly channel (chart 12278) had a controlling depth of 23 feet in 1983. In 2004, the westerly channel had a controlling depth of 29 feet.

(109) The marked channel on the west side of Sparrows Point, in 2007, had a controlling depth of 30.8 feet and leads to the shipyard facilities; a marked branch coal pier channel in 1986–1987, had a midchannel controlling depth of 18 feet.

(110) **Bear Creek**, on the northeast side of Patapsco River 4 miles above the mouth, has channel depths of 8 feet or more almost to the head, 3.5 miles above the mouth. Rocks, covered 2 feet, are southeast of Sollers Point in about 39°13'10"N., 76°31'01"W. Numerous piles and obstructions are in the entrance to the creek between Coffin Point and Lloyd Point. An overhead power cable 1 mile above the mouth has a clearance of 95 feet between the lighted structures, and 62 feet elsewhere. A fixed highway bridge with a clearance of 55 feet crosses Bear Creek from the northern side of **Coffin Point** to the opposite shore.

(111) **Peachorchard Cove**, on the west side of Bear Creek about 0.8 mile above the entrance, has depths of 7 feet for 0.4 mile to within 0.1 mile of its head.

(112) A highway bridge 0.5 mile up Bear Creek has a bascule span with a clearance of 25 feet. (See **117.1 through 117.59 and 117.543,** chapter 2, for drawbridge regulations.) The railroad bridge 0.9 mile above the fixed bridge has a swing span with a clearance of 8 feet. (See **117.1 through 117.49,** chapter 2, for drawbridge regulations.)

(113) **Lynch Cove,** on the northwest side of Bear Creek 1 mile above the fixed bridge, has general midchannel depths of 8 feet or more for about 0.6 mile, thence shoaling to 1 foot to the head 0.8 mile above the entrance.

(114) There are several small-craft facilities in Lynch Cove.

(115) **Schoolhouse Cove,** 1.6 miles above the fixed bridge, has depths of 7 feet to near the head. A small boatyard in the cove can haul out boats up to 45 feet for hull and engine repairs. A yacht club is on the east side of Bear Creek just below Schoolhouse Cove.

(116) The highway bridge over Bear Creek just above Schoolhouse Cove, has a bascule span with a clearance of 12 feet. (See **117.1 through 117.59 and 117.543,** chapter 2, for drawbridge regulations.)

(117) A 6 m.p.h. **speed limit** is enforced in Bear Creek above Lynch Cove on Saturdays, Sundays, and holidays.

(118) **Fort Carroll** is a stone-and-concrete structure on the northeast side of Patapsco River main channel 4.4 miles above the mouth. The white tower of the abandoned lighthouse is on the west front of the fort.

(119) **Hawkins Point,** on the southwest side of Patapsco River 4.5 miles above the mouth, is at the southeastern limits of Baltimore. There are many obstructions surrounding the point. A privately dredged and marked 33-foot channel leads to a 720-foot-long cargo pier with rail and truck connections 0.4 mile northwestward of the point.

(120) The **Francis Scott Key Bridge,** a fixed highway bridge with a clearance of 185 feet, crosses the Patapsco River between Hawkins Point and Sollers Point.

(121) **Curtis Bay,** on the southwest side of Patapsco River 6 miles above the mouth, is the approach to large coal and oil wharves and to several plants. The entrance is between Leading Point and Fishing Point, 0.8 mile to the northwestward. The federal project depth in Curtis Bay Channel is 50 feet. (See Notices to Mariners and latest editions of charts for controlling depths.)

(122) A privately dredged channel leads to the gypsum pier with mooring dolphins and conveyor belt 0.2 mile west of Leading Point. In 1983, a controlling depth of 24 feet was in the channel.

(123) The petroleum terminals on **Fishing Point,** the ore pier on the southwest side of **Stonehouse Cove,** the coal pier at the head of Curtis Bay, and the other deep-draft facilities in Curtis Bay were described earlier in this chapter under Wharves, Baltimore Harbor.

(124) **Curtis Creek** empties into the head of Curtis Bay from southward between **Sledds Point** and **Ferry Point**. A dredged channel in the creek has a Federal project depth of 35 feet in the lower reach and 22 feet in the middle and upper reaches. (See Notice to Mariners and the latest edition of the charts for controlling depths.) The channel is marked by lighted and unlighted buoys.

(125) **Cabin Branch,** on the west side of Curtis Creek just south of Ferry Point, has depths of 17 feet or more to within 0.1 mile of a fixed bridge 0.4 mile above the entrance. The industrial wharves on the north side of the branch have reported depths of 12 to 28 feet at their faces.

(126) Several of the wharves on either side of Curtis Creek between the entrance and Pennington Avenue bridge have depths of 25 to 35 feet at their faces.

(127) A shipyard on the west side of Curtis Creek just north of the Pennington Avenue bridge has a marine railway that can handle vessels up to 125 feet for hull and engine repairs; cranes to 65 tons are available.

(128) Above its entrance, Curtis Creek is crossed by the following bascule highway bridges: at Mile 0.85, the Pennington Avenue bridge, clearance 40 feet; at Mile 0.86, the Route 695 bridge, clearance 58 feet. At Mile 1.3, a railroad bridge has a swing span with a clearance of 13 feet. (See **117.1 through 117.59 and 117.557,** chapter 2, for drawbridge regulations.)

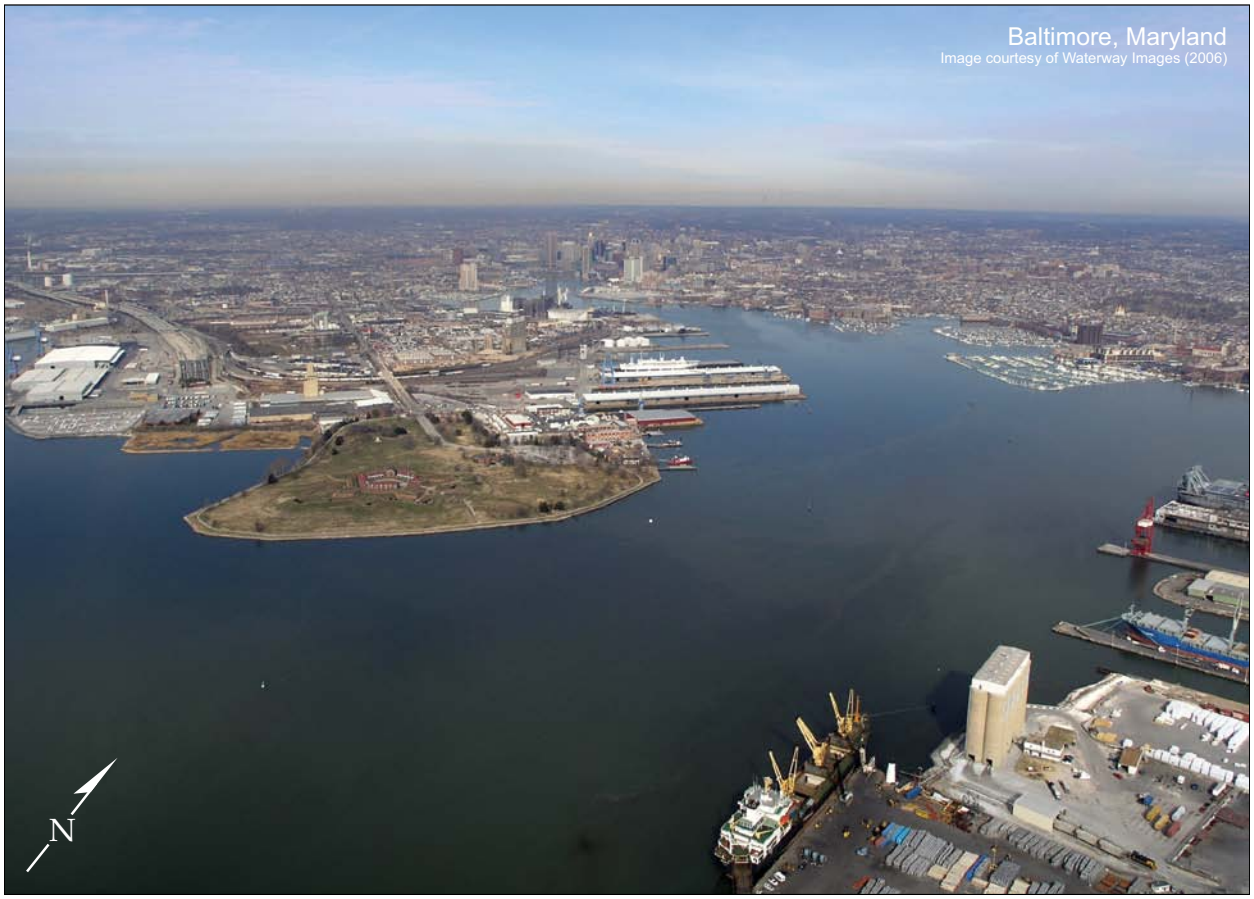
(129) **Arundel Cove** is on the east side of Curtis Creek 1.6 miles above the entrance. The Coast Guard yard is on the north side of the cove. A highway bridge 0.4 mile above the entrance to the cove has a 28-foot fixed span with a clearance of 6 feet.

(130) A depth of 13 feet can be carried up Curtis Creek from Arundel Cove to the forks 2.3 miles above the entrance. **Furnace Creek**, the west fork, in 1976, had reported depths of 11 feet or more for 0.8 mile, then shoals gradually to 4 feet at the fixed highway bridge 0.4 mile farther up; the bridge has a clearance of 8 feet. Overhead power cables about 0.1 mile above the bridge have a least clearance of 46 feet. **Marley Creek**, the middle fork, in 1997 had a reported controlling depth of 5 feet for 1.6 miles, thence 3.5 feet to the fixed bridge about 0.4 mile farther up; the bridge has a clearance of 9 feet. Overhead power cables crossing Marley Creek have a least clearance of 28 feet.

(131) A marine service pier on the west side of Marley Creek 1.3 miles above the forks has depths of 12 feet at the face. Gasoline and water are available. A marine railway can handle boats up to 50 feet for hull and engine repairs.

(132) The **Fairfield** section of Baltimore begins 6.5 miles above the mouth of Patapsco River and extends upriver along the southwest side for more than 1 mile. Most of the piers and wharves handle paper, petroleum products, sulfur, chemicals, fertilizers, scrap metal, and lumber; depths range from 18 to 30 feet at most of the facilities, but depths of 25 to 34 feet are at the petroleum terminals at the southerly end of the section. The deep-draft facilities at Fairfield were described earlier in this chapter under Wharves, Baltimore Harbor.

(133) **Dundalk Marine Terminal,** on the east side of Patapsco River 6.5 miles above the mouth, has two marked entrance channels. **Dundalk East Channel,** marked by buoys and a private **033°** lighted range, had a controlling depth of 42 feet in 2003. **Dundalk West Channel,** marked by buoys and a private **030°** lighted range, had a controlling depth of 42 feet in 2002. Several cranes have been lost overboard and some ships have parted their lines while berthed at Dundalk Marine Terminal during extreme wind conditions. Mariners should contact Maryland Port Administration for details about



safety requirements. The facilities at the terminal were described earlier in this chapter under Wharves, Baltimore Harbor.

(134) **Colgate Creek,** just north of the Dundalk facility, has a controlling depth of 2 feet. A depth of about 24 feet can be carried to the Western Electric Co. Wharf by using Dundalk West Channel.

(135) The fixed highway bridge 0.3 mile above the entrance has a clearance of 8 feet. The railroad bridge 0.8 mile above the entrance has a swing span with a width of 30 feet and a clearance of 5 feet; the swing span is inoperative and remains in a closed position. Overhead power cables crossing the creek have a least clearance of 28 feet.

(136) The **Lower Canton** section of Baltimore begins on the north side of Patapsco River 7.5 miles above the mouth and extends westward to **Lazaretto Point.** Dredged and buoyed channels lead to the principal piers which handle general cargo, grain, ore, and chemicals; depths of 20 to 41 feet are at the berths. The deep-draft facilities in this section were described earlier in this chapter under Wharves, Baltimore Harbor.

(137) Patapsco River turns sharply westward at the intersection of Ferry Bar Channel and main Fort McHenry Channel 7.8 miles above the mouth. About 0.7 mile wide between **Fort McHenry** on the north and Fairfield on the south, the river narrows to a width of 150 yards 10 miles above the mouth and meanders off to the southwestward while the deeper channel continues westward into **Middle Branch.**

(138) **Ferry Bar** is a point on the north side of Ferry Bar Channel 1.5 miles westward of Fort McHenry.

(139) Ferry Bar Channel (East Section) is marked by lighted buoys and has a project depth of 42 feet. (See Notice to Mariners and latest editions of the charts for controlling depths.)

(140) A marked channel leads from the west end of Ferry Bar Channel to the Hanover Street bascule bridge. In 1989, the reported controlling depth was 4 feet.

(141) The Western Maryland Railway **Port Covington** section of Baltimore begins 0.8 mile west of Fort Henry and extends west and southwestward to Ferry Bar. The approach is 1.2 miles westward along Ferry Bar Channel.

(142) The deep-draft facilities in this section were described earlier in this chapter under Wharves, Baltimore Harbor.

(143) Depths of about 5 to 8 feet are at the outer ends of piers at the boatyards northwestward of Ferry Bar. Hull and engine repairs can be made. The largest marine railway can handle boats up to 60 feet; largest mobile lift, 20 tons. Gasoline, diesel fuel, slips, and some marine supplies are available.

(144) The Hanover Street bridge over Middle Branch 0.3 mile above Ferry Bar has a bascule span with a clearance of 38 feet at the center, and 23 feet for a central width of

150 feet. The Western Maryland Railway bridge, 1 mile above Ferry Bar, has a swing span with a clearance of 9 feet. (See **117.1 through 117.59 and 117.566,** chapter 2, for drawbridge regulations.)

(145) Most of the marine facilities in Middle Branch are used by small vessels and barges for delivery of petroleum and coal for local consumption.

(146) **Northwest Harbor**, the northerly branch of Patapsco River, is entered between Fort McHenry and Lazaretto Point, 8.2 miles above the mouth of Patapsco River. East Channel, a dredged channel with a project depth of 49 feet, extends north from the entrance for about 0.7 mile to a turning basin. West Channel, with a project depth of 40 feet, branches northwest from East Channel for about 0.8 mile to a turning basin. (See Notice to Mariners and latest editions of the charts for controlling depths.) Above the West Channel turning basin, depths of about 25 to 21 feet can be carried to the head of Northwest Harbor at Inner Harbor.

(147) **Fort McHenry Tunnel,** crosses under the entrance to Northwest Harbor, extending from Lazaretto Point to a point about 0.2 mile westward of Fort McHenry.

(148) The CSX Transportation, Inc. **Locust Point** section is on the southwest side between Fort McHenry and Locust Point. Most of the piers handle general cargo, but some also handle bulk; depths alongside are 30 to 35 feet. The grain elevator at pier 7 has a capacity of nearly 4 million bushels and can load 150,000 bushels per hour.

(149) The piers and wharves on the east and north sides of Northwest Harbor handle general cargo, coal, petroleum products, chemicals, and fertilizers; depths alongside the principal facilities are 30 to 35 feet, and at the others, 15 to 25 feet. The deep-draft facilities in this section were described earlier in this chapter under Wharves, Baltimore Harbor.

(150) The ship repair facilities in Northwest Harbor can handle large ocean-going vessels. The graving dock on the southwest side of the harbor 0.4 mile above Fort McHenry is 460 feet long, 58 feet wide at the bottom, with a water depth of 18 feet. A shipbuilding basin, 1,200 feet long and 198 feet wide, is on the west side of Sparrows Point.

(151) **Inner Harbor,** at the head of Northwest Harbor, has a marina on the south side with depths of 12 feet or more at the slips. Berths, electricity, gasoline, diesel fuel and some marine supplies are available.

(152) A 6-knot **speed limit** is enforced in Inner Harbor.

Chart 12278

(153) **Swan Point** (39°08'41"N., 76°16'44"W.), on the east side of Chesapeake Bay opposite Patapsco River entrance, has been mentioned in chapter 14.

(154) **Tolchester Beach,** on the east side of Chesapeake Bay 4.5 miles north-northeast of Swan Point, has a privately dredged entrance channel and basin. In 2003, the reported approach and alongside depth was 6 feet. Gasoline, diesel fuel, marine supplies, pump-out station, storage, water, ice, electricity, and limited berths are available. A 55-ton mobile lift is available for repairs.

(155) **Fairlee Creek,** on the east side of Chesapeake Bay 8.5 miles north-northeastward of Swan Point, has a narrow entrance between a jetty on the east and a long, low hook on the west. The privately buoyed entrance has depths of about 6 feet. In 2007, shoaling to 3.3 feet was reported in the entrance. A marina with berthing facilities is on the east side of the creek just inside the entrance; gasoline, diesel fuel, pump-out station, and some marine supplies are available. A 50-ton mobile lift is available for hull and engine repairs.

(156) **Worton Point** (39°19'10"N., 76°11'14"W.) is on the east side of Chesapeake Bay 152.5 miles above the Virginia Capes.

(157) About 1.5 miles southward of Worton Point is **Worton Creek,** which has depths of 10 to 12 feet in the broad bight at the entrance and 7 feet inside for 1.4 miles. Good anchorage, protected from easterly winds, is available in depths of 11 to 12 feet just inside the entrance. A good, well-protected anchorage in depths of 6 to 9 feet is also reported in the creek below Buck Neck Landing. The critical part of the channel, 0.5 mile above the entrance, is marked by buoys.

(158) A marina at **Green Point Wharf,** on the east side of Worton Creek about 1.1 miles above the mouth, has gasoline, diesel fuel, berths with electricity, a pump-out station, a 15-ton lift, water, ice, and some marine supplies; limited engine repairs can be done. The marina at **Buck Neck Landing,** on the east side of the creek 1.4 miles above the entrance, has gasoline, diesel fuel, berthing facilities and marine supplies are available. Lifts to 70 tons are available for repairs. The public bulkhead adjoining the fuel pier has depths of about 6 feet alongside.

(159) **Pooles Island,** 10 miles northeastward of Baltimore Harbor entrance, is a portion of the Aberdeen Proving Ground complex constituting prohibited land areas and dangerous contiguous water areas. Landing is prohibited to all personnel and boats, primarily because of the presence of hazardous unexploded ordnance and because such landings violate Federal Regulations. (See **334.140,** chapter 2, for limits and regulations of the **restricted area.**)

(160) **Pooles Island Light** (39°17'26"N., 76°15'59"W.), 38 feet above the water, is shown from a stone tower on the NW side of the island. On the island are the white skeleton towers of two lighted ranges, the rear tower common to both. The north range marks a reach of the main channel leading to the Chesapeake and Delaware Canal. The south range marks a passage across the middle ground east of the island. It is stressed that Pooles Island is a prohibited land area entirely within the Aberdeen Proving Ground complex and is covered with hazardous unexploded ordnance.

(161) In 1969, shoaling was reported 1.2 miles east of the southern end of Pooles Island in about 39°16'26"N., 76°14'48"W.

Local magnetic disturbance

(162) Differences of as much as 5° from the normal variation have been observed in the channel from Pooles Island to Howell Point (chart 12274).

(163) **Pooles Island Bar Light** (39°15'42"N., 76°16'41"W.), 27 feet above the water, is shown from a black skeleton tower on a cylinder base, in depths of 15 feet 0.8 mile south-southwestward of the island; the light is 147.1 miles above the Virginia Capes.

(164) A buoyed lane extends southwestward between fishtrap areas from eastward of Pooles Island to the Baltimore channel 1 mile southward of North Point. Mariners are cautioned that the southwest end of the lane runs over a discontinued spoil area. The lane, with depths of about 10 to 14 feet in 1994, is entered on the Pooles Island south range, bearing **264**°; Pooles Island Bar Light is on the northwest side of the lane.

(165) The approach to the rivers between North Point (39°11'42"N., 76°26'38"W.) and Pooles Island is through a buoyed side lane southwestward of Pooles Island Bar Light.

(166) **Hawk Cove,** 5 miles north-northeastward of North Point, has depths of 8 to 11 feet and is a good anchorage.

(167) A shallow passage known as **Pleasure Island Channel**, 3 miles northeast of North Point and leads to Hawk Cove. In 2004, the controlling depth was 2.1 feet. The channel is marked by lights and daybeacons.

(168) **Back River,** which flows into the southwest end of Hawk Cove, has depths of 7 to 4 feet for 6 miles to a fixed highway bridge with a clearance of 16 feet; overhead power cables above and below the bridge have a clearance of 34 feet. Even the smallest boats seldom go above the bridge. The channel, marked by private buoys and daybeacons, is clear except for a 4-foot middle ground about halfway between Hawk Cove and the bridge.

(169) There are small-craft facilities on both sides of Back River.

Charts 12278, 12274, 12273

(170) **Middle River**, 6.5 miles north-northeastward of North Point, is entered through a marked dredged channel which leads to an anchorage basin at the Martin Marietta Company plant at the head of **Dark Head Creek**, the east fork of the river 3.2 miles above the mouth. In 2009, the controlling depth was 8.0 feet at midchannel to the anchorage basin, thence 8.4 feet in the basin with lesser depths along the sides. The west fork of Middle River has depths of 7 feet to within 0.5 mile of a fixed bridge near the head.

(171) A 6 m.p.h. **speed limit** is enforced on Saturdays, Sundays and holidays.

(172) **Sue Creek,** on the south side of the entrance to Middle River, has depths of about 7 feet to the yacht club just inside the entrance, thence depths of 5 to 3 feet for 1 mile inside. The entrance is marked by a light.

(173) **Galloway Creek,** a broad cove on the north side of Middle River just inside the entrance, has depths of 8 to 5 feet except along the shoreline.

(174) **Frog Mortar Creek,** on the northeast side of Middle River 1.5 miles above the mouth, has depths of 6 to 8 feet. A 12-foot marked channel leads from Middle River to the Martin Marietta seaplane basin on the west side of the creek 0.5 mile above the entrance. A 6 m.p.h. **speed limit** is enforced on Saturdays, Sundays and holidays.

(175) **Warning.**–Small-craft operators in Frog Mortar Creek are advised to use caution in the vicinity of Martin State Airport. Small-craft with masts exceeding 37 feet in height above the waterline create an obstruction to low-flying aircraft. Operators of such vessels transiting Frog Mortar Creek should contact Martin State Airport Control Tower by telephone at 410–238–1008 when visibility is less than 1.0 statute mile so approaching aircraft can be warned. Tower operations are from 0600 to 2200 daily.

(176) **Hopkins Creek,** on the southwest side of Middle River 2.6 miles above the mouth, has depths of 8 to 5 feet.

(177) Numerous small-craft facilities are at the upper end of Middle River and in most of the tributaries.

(178) **Seneca Creek,** 8 miles north-northeastward of North Point, has depths of 8 feet in the entrance and 5 to 6 feet into the several arms. A light marks the outer end of the shoal on the east side of the entrance. Gasoline, slips, and some marine supplies can be obtained at several marinas along the creek. Lifts to 25 tons are available for hull and engine repairs.

(179) **Gunpowder River**, 9 miles northeastward of North Point, is entered through a channel marked by a light and buoys westward of **Spry Island Shoal**, in midentrance; the shoal is reported covered 2 to 4 feet and should be avoided. In 1998, the river channel had reported depths of 8 feet for 2 miles, thence 2 to 9 feet for 4 miles, thence 3 feet in a privately dredged channel leading to an unnamed creek below **Joppatowne**. In 1998–2001, depths of 5 feet were in the middle of the unnamed creek below Joppatowne; thence in 1998–2000, depths range from 3 to 6 feet in the middle of the marina basin at Joppatowne.

(180) The fixed railroad bridge 6.3 miles above the mouth has a 19-foot channel span with a clearance of 11 feet. An overhead power cable at the bridge has a clearance of 37 feet.

(181) Marinas above the bridge have slips, gasoline, a launching ramp, and some marine supplies. A 15-ton mobile hoist is available for hauling out boats for hull and engine repairs.

(182) Spry Island Shoal and most of Gunpowder River are within the **Aberdeen Proving Ground** complex, a **restricted area**, shown on charts 12273, 12274, and 12260.

(See **334.140**, chapter 2, for limits and regulations.) The area is marked by private seasonal buoys.

(183) Some waters of the Aberdeen Proving Ground are closed to the public at all times. Others have a limited access during specified hours. (See **334.140,** chapter 2, for limits and regulations.)

(184) It is stressed that opening these restricted and dangerous waters to navigation in the Aberdeen Proving Ground complex does not include the privilege of landing personnel or boats on any of the Government property. All these land areas constitute an extremely hazardous risk due to the presence of unexploded ordnance. Any landings constitute punishable Federal offenses.

(185) Additional information on this subject is contained in the pamphlet "Boater's Guide to Restricted Water Zone," published by the Aberdeen Proving Ground. This pamphlet is available at most local marinas in the area.

Chart 12274

(186) **Bush River** is on the northwest side of Chesapeake Bay 152 miles above the Virginia Capes. The lower 5 miles of the river are within the Aberdeen Proving Ground complex constituting prohibited land areas and restricted and dangerous water areas.

(187) The river has minimum depths of 7 feet to the railroad bridge 6.3 miles above the mouth, thence 5 to 6 feet for another 1.5 miles. The approach to the river and the channel inside are marked by buoys and a light as far as **Tapler Point,** on the west side 3.5 miles above the mouth, and by a light, on the east side 0.3 mile southward of the railroad bascule bridge, which shows a high-intensity beam down river; the lower light, off the western shore about 2.7 miles above the mouth, shows high-intensity beams up and down river.

(188) The railroad bridge 6.3 miles above the mouth of Bush River has a 35-foot bascule span with a clearance of 12 feet. (See **117.1 through 117.59 and 117.547,** chapter 2, for drawbridge regulations.) The power cable at the bridge has a clearance of 35 feet. A high-voltage power cable about 200 yards below the bridge has a clearance of 43 feet and is supported by towers on either bank and a tower near midriver; a privately maintained light is shown from the southeast leg of the middle tower.

(189) **Otter Point Creek,** on the west side of Bush River 0.5 mile above the railroad bridge, has depths of 3 feet for 1 mile above the entrance. An overhead power cable with a clearance of 48 feet crosses the creek.

(190) Marinas in Otter Point Creek and on the eastern shore of the Bush River just above the bridge have slips, gasoline, launching ramps, and some marine supplies. Hull and engine repairs can be made; the largest haul-out capacities are: railway, 45 feet; lift, 12 tons.

(191) **Still Pond** (39°20'25"N., 76°08'30"W.), a bight on the southeast side of Chesapeake Bay 154.7 miles above the Virginia Capes, has general depths of 9 to 11 feet and is a good anchorage for small craft during easterly winds. **Churn Creek,** which empties into the southwest corner of the bight, has depths of 2 feet in the very narrow entrance and deeper water inside.

(192) **Stillpond Creek,** at the southeast corner of the bight, is entered through a narrow privately dredged channel. In 1988, the reported controlling depth was 7.5 feet through the entrance channel. Lights and daybeacons mark the entrance channel. The channel inside the creek is marked by a daybeacon and buoys. Stillpond Creek entrance channel is subject to frequent shoaling; local knowledge is advised.

Coast Guard

(193) **Stillpond Coast Guard Station** is on the north side of the entrance to Stillpond Creek.

(194) **Sassafras River** joins Chesapeake Bay from eastward 159 miles above the Virginia Capes. The entrance is between **Howell Point,** marked by a light, and **Grove Point,** 3.5 miles east-northeastward; the entrance width normal to the channel is about 1 mile. The river is used by vessels drawing up to 12 feet, but the usual draft is 6 feet or less.

(195) The river channel has depths of 13 feet, or more to a point 1 mile above the U.S. Route 213 bascule bridge, thence 7 to 3 feet for another 2 miles. The channel is broad and straight for the first 4 miles, then is narrow and crooked in places, but is marked as far as the highway bridge 10 miles above the mouth.

(196) **Betterton** is a village on the south side of Sassafras River 2 miles eastward of Howell Point. The principal wharf has depths of 9 feet at the outer end. Excursion boats from Baltimore call at the wharf during the summer. Gasoline and some supplies are available in the summer.

(197) **Turner Creek,** on the south side of Sassafras River 4.5 miles above the mouth, has depths of at least 7 feet in the very narrow entrance and 5 feet for 0.6 mile upstream. The entrance is marked by a seasonal buoy. The creek has several small landings along its shores and is much traveled by local pleasure boats.

(198) **Kentmore Park** is a small community on the south side of Sassafras River 5 miles above the mouth. The community wharf has depths of 7 feet at the upper end.

(199) **Fredericktown,** on the north side, and **Georgetown,** on the south side of Sassafras River 10 miles above the mouth, are connected by a highway bridge that has a 40-foot bascule span with a clearance of 5 feet. The bridgetender monitors VHF–FM channel 16 and works on channels 13 and 68; call sign KYU–699. (See **117.1 through 117.59 and 117.570**, chapter 2, for drawbridge regulations.) Many yachts and pleasure craft harbor here. The **speed limit** is 6 miles per hour in Sassafras River in an area extending about 0.5 mile above and 0.5 mile below the highway bridge.

Small-craft facilities

(200) There are numerous small-craft facilities on both sides of the river just below the bridge. Berthing, electricity, water, gasoline, diesel fuel, pump-out station, storage and marine supplies can be obtained at these marinas. Mobile lifts are available to 45-tons for hull and engine repairs.

(201) The unmarked channel in Sassafras River above the bridge is narrow in places and difficult to follow without local knowledge. A marina on the south side of the river 1 mile above the bridge has gasoline and some supplies; an 18-ton lift can haul out boats for hull and engine repairs.

(202) **Spesutie Narrows** (39°25.2'N., 76°05.7'W.), on the northwest side of Chesapeake Bay 159 miles above the Virginia Capes, is between the mainland and **Spesutie Island,** close to the eastward. A privately dredged channel leads from the flats off the southern entrance into and along the narrows to a basin at the Army landings at Mulberry Point. In 2001, the reported controlling depth was 6 feet to the basin with 4 to 7 feet at the landings. The entrance channel is marked by buoys and privately maintained lighted ranges, and the inner channel is marked by daybeacons.

(203) The upper end of the narrows is closed by a solid-fill causeway.

(204) Spesutie Island and Spesutie Narrows are within the Aberdeen Proving Ground complex constituting prohibited land areas and restricted and dangerous contiguous water areas.

(205) **Elk River,** on the east side of Chesapeake Bay 162 miles above the Virginia Capes, is the approach to the Chesapeake and Delaware Canal, which is described in chapter 7. The entrance to the river is between **Grove Point** and **Turkey Point,** 3 miles north-northeastward; the latter point is a thinly wooded bluff with abrupt slopes at the south end. The entrance width normal to the channel is about 1 mile.

(206) **Mariners are required to observe the Federal speed regulation when navigating throughout Elk River, Back Creek, and Chesapeake and Delaware Canal. (See Navigation Regulation §162.40(b), chapter 7, for the regulated speed limit and other warnings.)**

(207) A **special anchorage** is on the east side of Turkey Point in **Jacobs Nose Cove.** (See **110.1 and 110.71,** chapter 2, for limits and regulations.)

(208) The current velocity is 0.8 knot.

Local magnetic disturbance

(209) Differences of 3° to 8° from normal variation have been observed in Elk River channel from Grove Point to Courthouse Point.

(210) **Bohemia River,** on the east side of Elk River 5 miles above the mouth, has depths of 7 feet or more for 4 miles to the junction of **Great Bohemia Creek** and **Little Bohemia Creek,** thence 6 to 4 feet for 1.5 miles in Great Bohemia Creek and 7 feet for 1 mile in Little Bohemia Creek. The channel is broad and easy to follow for 2 miles above the entrance, then becomes very narrow and crooked. In 1980, shoaling to an unknown extent was reported in the entrance to the Bohemia River in about 39°28'45"N., 75°56'13"W.

(211) The cove on the southwest side of Bohemia River 3 miles above the entrance has depths of 3 to 5 feet and is much used as a small-boat anchorage.

(212) A highway bridge 4.0 miles above the mouth at Bohemia River has a 40-foot fixed span with a clearance of 30 feet. The **speed limit** is 6 miles per hour from the highway bridge to a point about 1 mile downstream in Bohemia River.

(213) There are several small-craft facilities along the north side of Bohemia River, about 1.5 miles above the entrance, and along the south side of the river below the bridge.

(214) **Old Town Point Wharf,** on the southeast side of Elk River 7 miles above the mouth, has depths of 10 feet at the outer end. This is a Government wharf and a vessel identification and monitoring station for the west end of the Chesapeake and Delaware Canal.

(215) **Back Creek,** on the east side of Elk River 9 miles above the mouth and 171.4 miles above the Virginia Capes, is the route of the Chesapeake and Delaware Canal and has been described in chapter 7.

(216) Above Back Creek, the natural channel in Elk River is marked by private buoys to just above **Locust Point** (39°33'54"N., 75°50'56"W.). Depths in the narrow crooked channel vary considerably, ranging from about 10 feet at the south end to about 1 foot off Locust Point; the chart is a guide. In 1978, a depth of 1 foot was reported to be available in the winding channel above Locust Point. For a distance of about 0.4 mile northward of Locust Point and about 0.2 mile southward of **Whitehall Point,** the channel is reported to be marked by private stakes. Mariners bound for Elkton are advised to seek local knowledge when transiting the channel.

(217) Small-craft facilities are on both sides of Elk River 5 miles above Old Town Point Wharf.

(218) **Big Elk Creek,** on the east, and **Little Elk Creek,** on the west, have depths of 3 feet to the fixed highway bridges 0.6 and 0.4 mile above their respective mouths. The channels in each are narrow and crooked with numerous snags and shoals that are unmarked. Extreme caution is advised beyond the junction. **Elkton,** between the creeks and 16 miles above the mouth of Elk River, is on the main line of the Penn Central Railroad and has several industrial plants.

(219) The natural channel of Chesapeake Bay turns northward off the mouth of Elk River and splits into two branches between Turkey Point and Spesutie Island, 2.3 miles to the westward. One branch rounds Spesutie Island and continues northward to Susquehanna River; the other hugs the west side of Turkey Point and high thickly wooded **Elk Neck**, and continues to Northeast River. The flats between the two branches are very shallow, and large areas bare at low water.

Susquehanna River, Maryland
Image courtesy of Waterway Images (2006)

(220) **Fishing Battery Light** (39°29'42"N., 76°04'59"W.), 38 feet above the water, is shown from a black skeleton tower on the battery on the east side of the channel leading to Susquehanna River; the light is 167.1 miles above the Virginia Capes. Near the light are a house and a few trees. A shallow channel leads from the main channel to a basin on the west side of the light.

(221) **Swan Creek,** on the western shore of Chesapeake Bay opposite Fishing Battery Light, has depths of 4 feet in the entrance and 3 to 10 feet inside for about 2 miles. The creek is little used except by boats of the U.S. Army. An overhead power cable with a reported clearance of 40 feet crosses the northern part of the creek.

(222) **Susquehanna River** empties into the head of Chesapeake Bay from northwestward 170.1 miles above the Virginia Capes. The entrance is between **Concord Point** and **Perry Point**,1 mile east-northeastward. A marked dredged channel leads through the flats from deep water in Chesapeake Bay to Havre de Grace. A side channel leads to a basin at City Park at Havre de Grace. It is reported that the river is usually closed by ice for a few weeks during the winter, but ice gorges and freshets are infrequent because of the dams upstream.

(223) A **seaplane landing area** is in the middle of the entrance to Susquehanna River; mariners are advised to use caution.

(224) **Havre de Grace,** on the west side of the entrance to the Susquehanna River, is on the main lines of Amtrak and the CSX Transportation, Inc. The town has many pleasure craft and a significant amount of tug and barge traffic. Most wharves along the waterfront are in poor condition.

(225) A rock covered 6 feet and marked by buoys on the east, west, and south sides, is about 200 yards off the Havre de Grace wharves and 500 yards below the drawspan of the first bridge. There are said to be several other rocks between this rock and the wharves that require local knowledge to avoid. In 1967, a submerged rock was reported just north of the first bridge in 39°33'20"N., 76°04'58"W., about 200 yards east-northeastward of the charted rock.

(226) The railroad bridge 0.8 mile above the mouth has a swing span with a clearance of 52 feet. (See **117.1 through 117.59 and 117.575,** chapter 2, for drawbridge regulations.) The overhead power cable on the lower side of the bridge has a clearance of 127 feet. Stone piers of a former highway bridge, just below the railroad bridge, stand 15 feet above high water. The remaining three fixed bridges between Havre de Grace and Port Deposit have minimum clearance of 85 feet.

(227) There are berthing and repair facilities for small craft at Havre de Grace. One of the basins is protected by old railroad barges sunk in place.

(228) **Perryville,** on the opposite side of the river from Havre de Grace, has berthing facilities for small craft above the first bridge. Storage, some marine supplies and engine repairs are available; largest lift, 20 tons.

(229) Above Havre de Grace, depths of 13 feet to 50 feet are in the channel of Susquehanna River to Port Deposit, on the northeast side 4 miles above the mouth; the river is obstructed by rocks above this point. In 1977, rocks were reported in about 39°35.8'N., 76°07.2'W., about 3.6 miles above the mouth.

(230) **Garrett Island,** 0.8 mile long and 0.4 mile broad, high and wooded, is in midriver 1 mile above the mouth. The favored channel is west of the island, however, mariners are advised to use caution because of the numerous rocks, shoals, logs, and submerged pilings in this area.

(231) **Port Deposit** has a large manufacturing company that builds barges, derricks, and boats. The marinas at the south end of the town have berthing, storage, launching ramp and engine repair facilities; largest lift, 12 tons. Gasoline and some supplies are available.

(232) **Conowingo Dam** is about 10 miles above the mouth of the Susquehanna River.

(233) **North East River** empties into the head of Chesapeake Bay 4.5 miles eastward of Susquehanna River and 169.1 miles above the Virginia Capes. The entrance is between **Red Point**, which is 5 miles north-northeastward of Turkey Point, and **Carpenter Point**, on the west. The commercial traffic on the river is in seafood products and gravel shipped by barges; yachtsmen use it extensively.

(234) The controlling depth from the entrance to within 1 mile of a dam at the head of navigation was 2 feet in 2009. The channel is well marked for most of its length.

(235) Extensive small-craft facilities are at **Hance Point,** on the east side of North East River 2 miles above the mouth; at **Charlestown,** on the west side 2.5 miles above the mouth; and at **Northeast Heights,** on the east side 3 miles above the mouth.

(236) A **special anchorage** is westward of Northeast Heights. (See **110.1 and 110.70a,** chapter 2, for limits and regulations.)

(237) **North East,** at the head of navigation 4.5 miles above the mouth of North East River, has good rail and highway connections. In 2009, the controlling depth was 2 feet in the dredged channel leading to the basin, and also, in the basin. Gasoline and some supplies are available at a few of the fish piers.

TIDAL INFORMATION					
Chart	Station	LAT/LONG	Mean Higher High Water*	Mean High Water*	Mean Low Water*
12273	Town Point Wharf, Elk River	39°30'N/75°55'W	2.7	2.4	0.2
12273	Havre de Grace, Susquehanna River	39°32'N/76°05'W	2.5	2.1	0.2
12274	Pond Point, Bush River	39°23'N/76°15'W	1.8	1.4	0.2
12274	Betterton, Sassafras River entrance	39°22'N/76°04'W	2.2	1.8	0.2
12274	Chesapeake City, Back Creek	39°32'N/75°49'W	3.3	3.1	0.2
12278	Love Point, Chester River	39°02'N/76°18'W	1.7	1.4	0.2
12278	Baltimore, Ft. McHenry	39°16'N/76°35'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 November 2011

Appendix A

Sales Information

(1) NOAA publications, nautical charts and unclassified National Geospatial-Intelligence Agency (NGA) nautical charts are sold by authorized sales agents in many U.S. ports and in some foreign ports. Information on obtaining charting products and a listing of authorized agents can be found at http://nauticalcharts.noaa.gov.

Charts, Publications and Services–NOAA

Reporting corrections to Nautical Charts and Coast Pilots

(2) Users are requested to report all significant discrepancies or additions to NOAA navigational products, 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:

(3) Department of Commerce, NOAA
(4) Nautical Data Branch
(5) N/CS261, Station 7331
(6) 1315 East-West Highway
(7) Silver Spring, MD 20910

Nautical Charts

(8) United States Coastal and Intracoastal waters and possessions.
(9) Great Lakes, Lake Champlain, New York State Canals, and the St. Lawrence River–St. Regis to Cornwall, Canada.
(10) Catalogs of Charts and Publications:
(11) Catalog 1–Atlantic Coast
(12) Catalog 2–Pacific Coast
(13) Catalog 3–Alaska
(14) Catalog 4–Great Lakes
(15) Catalog 5–Gulf Coast

Dates of Latest Editions

(16) 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: http://www.nauticalcharts.noaa.gov/mcd/dole.htm.

Chart Validity

(17) CAUTION: A NOAA nautical chart is not a valid document until its publication is announced in the U.S. Notice to Mariners. This also applies to NOAA nautical publications such as Coast Pilot. The date of a chart is of vital importance to the navigator. When charted information becomes obsolete, further use of the chart for navigation may be dangerous.

Coast Pilots

(18) U.S. Coast Pilot 1, Atlantic Coast, Eastport to Cape Cod.
(19) U.S. Coast Pilot 2, Atlantic Coast, Cape Cod to Sandy Hook.
(20) U.S. Coast Pilot 3, Atlantic Coast, Sandy Hook to Cape Henry.
(21) U.S. Coast Pilot 4, Atlantic Coast, Cape Henry to Key West.
(22) U.S. Coast Pilot 5, Atlantic Coast–Gulf of Mexico, Puerto Rico, and Virgin Islands.
(23) U.S. Coast Pilot 6, Great Lakes, Lake Ontario, Erie, Huron, Michigan and Superior, and St. Lawrence River.
(24) U.S. Coast Pilot 7, Pacific Coast, California, Oregon, Washington, and Hawaii.
(25) U.S. Coast Pilot 8, Pacific Alaska, Dixon Entrance to Cape Spencer.
(26) U.S. Coast Pilot 9, Pacific and Arctic Coasts, Alaska–Cape Spencer to Beaufort Sea.

Distance Tables

(27) Distances Between United States Ports (available at http://www.nauticalcharts.noaa.gov/nsd/distances-ports/)

Tide Tables

(28) East Coast of North and South America, including Greenland.
(29) West Coast of North and South America, including Hawaii
(30) Central and Western Pacific and Indian Oceans
(31) Europe and West Coast of Africa, including the Mediterranean Sea

Tidal Current Tables

(32) Atlantic Coast of North America.
(33) Pacific Coast of North America and Asia

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:

(34) Oceanographic Division (N/OPS3)
(35) 1305 East-West Highway, 7th floor
(36) Silver Spring, MD 20912–3281
(37) Tel: 301–713–2815 Ext. 0
(38) Fax: 301–713–4500 (24 hours)
(39) Email: tide.predictions@noaa.gov
(40) Web: http://www.tidesandcurrents.noaa.gov

National Weather Service Offices

(41) 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:

(42) Baltimore, MD/Washington, DC: 44087 Weather Service Rd., Sterling, VA 20166.

(43) Philadelphia, PA/Mount Holly, NJ: 732 Woodlane Rd., Mount Holly, NJ 08060.

Marine Weather Services Charts

(44) Published by the National Weather Service (available at http://www.weather.gov/om/marine/pub-htm).

NOAA Weather Radio

(45) 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:

(46) KWO–35, New York, NY, 162.55 MHz. (40°46'N., 73°59'W.)

(47) KIH–28, Philadelphia, PA, 162.475 MHz. (40°03'N., 75°14'W.)

(48) KHB–38, Atlantic City, NJ, 162.40 MHz. (39°22'N., 74°26'W.)

(49) WXJ–94, Lewes, DE, 162.55 MHz. (38°47'N., 75°09'W.)

(50) WXK–97, Sudlersville, MD, 162.50 MHz. (39°11'N., 75°55'W.)

(51) KEC–83, Baltimore, MD, 162.40 MHz. (39°23'N., 76°43'W.)

(52) KHB–36, Washington, DC, 162.55 MHz. (38°38'N., 77°26'W.)

(53) KEC–92, Salisbury, MD, 162.475 MHz. (38°30'N., 75°38'W.)

(54) WXM–57, Heathsville, VA, 162.40 MHz. (37°54'N., 76°28'W.)

(55) KHB–37, Norfolk, VA, 162.55 MHz. (36°48'N., 76°28'W.)

(56) WXF–65, Richmond, VA, 162.475 MHz. (37°30'N., 77°32'W.)

(57) 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

(58) 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)

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

(60) For general information write or call:
(61) NOAA, National Weather Service
(62) National Center for Environmental Prediction
(63) Space Environment Center, W/NP9
(64) 325 Broadway
(65) Boulder, CO 80305
(66) Telephone: 303–497–3171
(67) Website: http://www.sec/noaa.gov/

Charts and Publications–Other U.S. Government Agencies

(68) A partial list of publications and charts considered of navigational value is included for the 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

(69) 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

(70) 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

(71) **U.S. Waters:**

(72) 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.

(73) 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.

(74) 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.

(75) 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.

(76) **Foreign Waters:** Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above).

Publications

(77) **Notices to Mariners:**

(78) 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

(79) **Special Notice to Mariners** are published annually in National Geospatial-Intelligence Agency U.S. Notice to Mariners 1. These notices contain important information of considerable interest to all mariners. Interested parties are advised to read these notices.

(80) **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.)

(81) **List of Lights (Foreign Countries):** Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above).

(82) **Sailing Directions (Foreign Countries):** Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above).

(83) **Radio Navigational Aids,** Pub. 117: Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above).

(84) 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.)

(85) **American Practical Navigator (Bowditch)** Pub. 9**:** Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above).

(86) **International Code of Signals Pub.** 102: Published by the National Geospatial-Intelligence Agency (see National Geospatial-Intelligence Agency Procurement Information above).

(87) **Product Dissemination Information Homepage:** maintained by the National Weather Service on the internet (http://www.nws.noaa.gov/om/marine/home.htm)

(88) **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.)

(89) **Federal Requirements for Recreational Boats:** available for free download at http://www.uscgboating.org/.

(90) **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

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

(91) **New York District**: 26 Federal Plaza, New York, NY 10278–0090. Coastal and tributary waters from Sandy Hook, NJ to a point just north of Manasquan Inlet.

(92) **Philadelphia District:** U.S. Customhouse, Second and Chestnut Streets, Philadelphia, PA 19106–2991. Coastal and tributary waters from a point just north of

Manasquan Inlet to the Maryland boundary including Delaware Bay and River, Elk River, and the Chesapeake and Delaware Canal.

(93) **Baltimore District:** 31 Hopkins Plaza, Baltimore, MD 21203–1717. Susquehanna River, Potomac River, District of Columbia, southwest part of Delaware, that part of Chesapeake Bay north of Smith Point, Maryland, on the western shore and including that part of Maryland between Chesapeake Bay and Atlantic Ocean.

(94) **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, Virginia, on the western shore except for Little Wicomico River, Virginia. Chowan River Basin downstream to and including the mouth of Meherrin River. The Albemarle and Chesapeake Canal within the State of Virginia and the Great Dismal Swamp Canal to Albemarle Sound.

Environmental Protection Agency (EPA) Offices

(95) Regional offices and States in the EPA coastal regions:

(96) **Region I** (New Hampshire, Vermont, Maine, Massachusetts, Connecticut, Rhode Island): J. F. Kennedy Federal Bldg. Boston, MA 02203.

(97) **Region II** (New Jersey, New York, Puerto Rico, Virgin Islands): 26 Federal Plaza, New York, NY 10278.

(98) **Region III** (Delaware, Maryland, Virginia, District of Columbia, Pennsylvania): 841 Chestnut Street, Philadelphia, PA 19107.

(99) **Region IV** (Alabama, Florida, Georgia, Mississippi, South Carolina, North Carolina): 345 Courtland Street, NE., Atlanta, GA 30365.

(100) **Region V** (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin): 230 South Dearborn Street, Chicago, IL 60604.

(101) **Region VI** (Louisiana, Texas): First International Bldg., 1201 Elm Street, Dallas, TX 75270.

(102) **Region IX** (California, Hawaii, Guam): 215 Fremont Street, San Francisco, CA 94105.

(103) **Region X** (Alaska, Oregon, Washington): 1200 Sixth Avenue, Seattle, WA 98101.

Coast Guard Headquarters

(104) Commandant, U.S. Coast Guard, Transpoint Bldg., 2100 Second Street SW., Washington, DC 20593–0001.

U.S. Coast Guard Navigation Center (NAVCEN)

(105) 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.

(106) The U.S. Coast Guard has terminated the transmission of LORAN–C signals effective February 2010. At this time, the U.S. LORAN–C signal will be unusable and permanently discontinued. This termination does not affect U.S. participation in the Russian–American or Canadian LORAN–C chains. U.S. participation in these chains will continue temporarily in accordance with international agreements.

(107) For further information and/or operational questions regarding GPS, DGPS or LORAN–C, visit the NAVCEN website at: http://www.navcen.uscg.gov/, or contact:

(108) NAVCEN MS 7310
(109) 7323 Telegraph Road
(110) Alexandria, VA 20598–7310
(111) 703–313–7598

Coast Guard District Offices

(112) Commander, First Coast Guard District, 408 Atlantic Avenue, Boston, MA, 02210–2209. Maine; New Hampshire; Vermont; Massachusetts; Rhode Island; Connecticut; New York except that part north of latitude 42°N. and west of longitude 74°39'W; that part of New Jersey north of 40°18'N. latitude, east of 74°30.5'W. longitude, and northeast of a line from 40°18'N., 74°30.5'W. north-northwesterly to the New York, New Jersey, and Pennsylvania boundaries at Tristate; all U.S. Naval reservations on shore at Newfoundland; the ocean area encompassed by the Search and Rescue boundary between Canada and the United States easterly to longitude 63°W.; thence due south to latitude 41°N.; thence southwesterly along a line bearing 219°T to the point of intersection at 37°N. latitude, 67°13'W. longitude with a line bearing 122°T from the New Jersey shoreline at 40°18'N. latitude (just south of the Shrewsbury River); thence northwesterly along this line to the coast.

(113) Commander, Fifth Coast Guard District, Federal Building, 431 Crawford Street, Portsmouth, VA 23704–5004. Delaware; Maryland; Virginia; District of Columbia; North Carolina; that part of Pennsylvania east of a line drawn along 78°55'W. longitude south to 41°00'N. latitude, thence west to 79°00'W. longitude, and thence south to the Pennsylvania–Maryland boundary; that portion of New Jersey that lies south and west of a line drawn from the New Jersey shoreline at 40°18'N. latitude (just south of the Shrewsbury River), thence westward to 40°18'N. latitude, 74°30.5'W. longitude, thence north-northwesterly to the junction of the New York, New Jersey, and Pennsylvania boundaries at Tristate; and the ocean area encompassed by a line bearing 122°T from the coastal end of the First and Fifth Districts' land boundary at the intersection of the New Jersey shoreline and 40°18'N. latitude (just south of the Shrewsbury River) to the southernmost point in the First Coast Guard District (a point located at approximately 37°N. latitude, 67°13'W. longitude); thence along a line bearing 219°T to the point of intersection with the ocean boundary between the Fifth and Seventh Coast Guard Districts,

which is defined as a line bearing 122°T from the coastal end of the Fifth and Seventh Districts' land boundary at the shoreline at the North Carolina–South Carolina border, point located at approximately 30°55'N., 73°W.; thence northwesterly along this line to the coast.

(114) **Note.–**A Marine Safety Office combines the functions of the Captain of the Port and Marine Inspection Office.

(115) The symbol (D) preceding an office indicates that a Documentation Office is at the same address.

Coast Guard Marine Safety Offices

(116) (D) Hampton Roads, Norfolk, VA: Norfolk Federal Bldg., 200 Granby Mall, Suite 700, 23510–1888.

(117) (D) Philadelphia, PA: One Washington Avenue, 19147–4395.

Coast Guard Stations

(118) 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 VHF–FM channel 16. After contact on channel 16, communications with the Coast Guard should be on channel 22. If channel 22 is not available to the mariner, communications may be made on channel 12. Selected stations guard the International Radiotelephone Distress, Safety and Calling Frequencies.

(119) **Pennsylvania:**

(120) Philadelphia (39°56'N.,75°08.5'W.). Search and Rescue boats located at Coast Guard Group Philadelphia on the west side of Delaware River at the foot of Washington Ave.

(121) **New Jersey:**

(122) Sandy Hook (40°28.2'N., 74°00.8'W.). On the bay side, 0.5 mile south of the point of the hook.

(123) Shark River (40°11.3'N., 74°00.8'W.). About 500 yards west of the entrance, on the north side of Shark River Inlet.

(124) Manasquan Inlet (40°06.2'N., 74°02.2'W.). Quarter mile west of inlet entrance, south side.

(125) Barnegat (39°45.5'N., 74°06.4'W.). On Long Beach at Barnegat City, 0.5 mile south-southeast of abandoned light tower.

(126) Beach Haven (39°33.1'N., 74°15.1'W.). At Beach Haven, 3 miles north of Beach Haven Inlet.

(127) Atlantic City (39°22.7'N., 74°25.4'W.). Near Absecon Inlet entrance, on north side of Clam Creek opposite Gardiner Basin.

(128) Great Egg (39°17.7'N., 74°33.8'W.). Inside Great Egg Harbor Inlet at Ocean City, 0.4 mile southward of bridge.

(129) Townsend Inlet (39°07.7'N., 74°42.6'W.). North side of the inlet, 2.3 miles southwest of Ludlum Beach Light (manned during summer months only).

(130) Cape May (38°56.9'N., 74°53.4'W.). On the south side of Cape May Harbor.

(131) Cape May Air Station (38°56.9'N., 74°53.4'W.). Adjacent to Cape May Coast Guard Station.

(132) **Delaware:**

(133) Indian River Inlet (38°36.6'N., 75°04.1'W.). On the north shore inside the inlet.

(134) **Maryland:**

(135) Ocean City (38°19.7'N., 75°05.4'W.). On Philadelphia Avenue between South Division and Worcester Streets.

(136) Crisfield (37°58.5'N., 75°51.5'W.). Aids to Navigation Team on the south side of Somers Cove.

(137) Still Pond (39°20.1'N., 76°07.9'W.). On the north side of the entrance to Stillpond Creek.

(138) Baltimore (39°11.9'N., 76°34.2'W.). At Curtis Bay Coast Guard Yard in Arundel Cove.

(139) Annapolis (38°55.3'N., 76°28.4'W.). On the west side of Fishing Creek, about 1 mile northwestward of Thomas Point.

(140) St. Inigoes (38°09.4'N., 76°25.7'W.). On west side of entrance to Molls Cove.

(141) **Virginia:**

(142) Chincoteague (37°55.8'N., 75°23.0'W.). On the east side of Chincoteague Channel, 0.3 mile south of the bridge.

(143) Parramore Beach (37°34.4'N., 75°37.0'W.). On the west side of Parramore Island, about 0.5 mile south of Wachapreague Inlet.

(144) Cape Charles (37°15.9'N., 76°00.9'W.). On spit between Mud Creek and Harbor of Refuge.

(145) Milford Haven (37°29.3'N., 76°18.4'W.). About 0.4 mile eastward of Narrows Point.

(146) Little Creek (36°54.7'N., 76°10.7'W.). About 1 mile south of the entrance to Little Creek, 4.5 miles west of Lynnhaven Inlet.

(147) Portsmouth (36°53.0'N., 76°21.2'W.). On the west side of the entrance to Craney Island Creek.

Coast Guard Radio Broadcasts

(148) 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:

(149) **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.

(150) **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.

(151) **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.

Scheduled broadcasts

(152) The following Coast Guard radio stations make scheduled broadcasts, preceded by a preliminary call on 2182 kHz and VHF–FM channel 16 at the times and frequencies indicated:

(153) **NMX,** Baltimore, MD, VHF–FM channel 22A, 0705 and 2030 e.s.t.

(154) **NMK**, Atlantic City, NJ, 2670 kHz and VHF–FM channel 22A, 0603 and 1803 e.s.t.

(155) **NMK–2**, Philadelphia, PA, VHF–FM channel 22A, 0735 and 1935 e.s.t.

(156) **NMN–70**, Eastern Shore, 2670 kHz, 0903 and 2133 e.s.t.; VHF–FM channel 22A, 0645 and 2100 e.s.t.

(157) **NMN–80,** Hampton Roads, VA, 2670 kHz, 0833 and 2103 e.s.t.; VHF–FM channel 22A, 0620 and 2130 e.s.t.

(158) **NMY–3**, CG Activities NY, 2670 kHz and VHF–FM channel 22A, 1050 and 2250 e.s.t.

(159) **NMN–37,** Fort Macon, NC, 2670 kHz, 0733 and 2003 e.s.t.; VHF–FM channel 22A, 0530 and 2030 e.s.t.

(160) **NMN–B,** Cape Hatteras, NC 2670 kHz, 0803 and 2033 e.s.t.; VHF–FM channel 22A, 0555 and 2000 e.s.t.

Coast Guard Maritime Safety Line

(161) For current local waterway information, port openings, closures, and restrictions from the Mississippi River to the Atlantic Ocean, telephone 800–682–1796.

U.S. NAVTEX Transmitting Stations

(162) NAVTEX coverage is reasonably continuous to 200 NM off the U.S. East, Gulf, and West Coasts; Puerto Rico; Southwest Alaska; Hawaii; and 300–400 NM off Guam. U.S. Coast Guard NAVTEX broadcast stations (Atlantic Ocean) and message content follow:

(163) **Boston (NMF)(Station F)**

(164) First Coast Guard District Broadcast Notices to Mariners.

(165) Distress Urgent, and Safety messages.

(166) International Ice Patrol Reports (in season).

(167) Gale, storm, and hurricane warnings.

(168) Offshore marine weather forecasts for:

(169) New England continental shelf to 1000 fathoms;

(170) Gulf of Maine;

(171) Georges Bank;

(172) South of New England;

(173) South of Nova Scotia.

(174) Broadcast times: 0045, 0445, 0845, 1245, 1645, 2045 GMT.

(175) **Portsmouth (NMN)(Station N)**

(176) Fifth Coast Guard District Broadcast Notices to Mariners.

(177) Distress, Urgent, and Safety messages.

(178) Gale, storm, and hurricane warnings.

(179) 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.

(180) Broadcast times: 0130, 0530, 0930, 1330, 1730, 2130 GMT.

(181) **Miami (NMA)(Station A)**

(182) Seventh Coast Guard District Broadcast Notices to Mariners.

(183) Distress, Urgent, and Safety messages.

(184) Gale, storm, and hurricane warnings.

(185) Offshore marine weather forecasts for the southwest North Atlantic south of 32° N and west of 65°W.

(186) Broadcast times: 0000, 0400, 0800, 1200, 1600, 2000 GMT.

(187) **San Juan (NMR) (Station R)**

(188) Greater Antilles Section Broadcast Notices to Mariners.

(189) Distress, Urgent, and Safety messages.

(190) Gale, storm, and hurricane warnings.

(191) Offshore marine weather forecasts for:

(192) Puerto Rico and Virgin Islands water out 20 NM;

(193) Eastern Caribbean Sea east of 75° W.

(194) Broadcast times: 0200, 0600, 1000, 1400, 1800, 2200 GMT.

(195) **New Orleans (NMG)(Station G)**

(196) Eighth Coast Guard District Broadcast Notices to Mariners.

(197) Distress, Urgent, and Safety messages.

(198) Gale, storm, and hurricane warnings.

(199) Offshore marine weather forecasts for the Gulf of Mexico.

(200) Broadcast times: 0300, 0900, 1500, 2100 GMT.

Customs Ports of Entry and Stations

(201) 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.

(202) **Northeast Region**

(203) Philadelphia District:

(204) Ports of Entry: Philadelphia, Chester, PA, Wilmington, DE.

(205) Baltimore District:

(206) Ports of Entry: Baltimore, Annapolis, Crisfield, MD.

(207) Customs Station: Salisbury (supervised by Baltimore port of entry).

(208) **Southeast Region**

(209) Washington District:

(210) Ports of Entry: Washington, DC, Alexandria, VA.

(211) Norfolk District:

(212) Ports of Entry: Norfolk, Newport News, VA.

Radio Weather Broadcasts

(213) Taped or direct broadcasts of marine weather forecasts and storm warnings are made by commercial and Coast Guard radio stations in the area covered by this Coast Pilot. The Coast Guard broadcasts coastal and offshore marine weather forecasts at the times and frequencies indicated:

(214) **NMN**, Portsmouth, VA:

(215) 4426.0 kHz, 0030, 0500, and 2300 e.s.t.

(216) 6501.0 kHz, 0030, 0500, 0630, 1100, 1700, 1830, and 2300 e.s.t.

(217) 8764.0 kHz, 0030, 0500, 0630, 1100, 1230, 1700, 1830, and 2300 e.s.t.

(218) 13089.0 kHz, 0630, 1100, 1230, 1700, and 1830 e.s.t.

(219) 17314.0 kHz, 1230 e.s.t.

(220) Marine Weather Services Charts are available for the following areas covered by this Coast Pilot:

(221) Montauk Point, NY to Manasquan, NJ.

(222) Manasquan, NJ to Cape Hatteras, NC.

(223) VHF weather broadcast schedules of Coast Guard radio stations are also listed in the description of Coast Guard Radio Broadcasts found elsewhere in this appendix.

Public Health Service Quarantine Stations

(224) Stations where quarantine examinations are performed:

(225) Washington, DC: U.S. Quarantine Station, P.O. Box 17329, Dulles International Airport, Washington, DC 20041.

(226) 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.

Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) OfficesAnimal and Plant Health Inspection Service (APHIS)

(227) 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.

(228) Information on importation of plants, animals, and plant and animal products is available from APHIS, Department of Agriculture, Federal Building, 6505 Belcrest Road, Hyattsville, MD 20782. The specific offices to contact are as follows: for plants, including fruits and vegetables, and plant products, Plant Protection and Quarantine, Room 635, telephone 301–436– 6799; for animal products, Import–Export Animals and Products Staff, Room 756A, telephone 301–436–7885; and for live ruminants, swine, equines, and poultry and other birds, Veterinary Services, Import–Export Animals and Products Staff, Room 764, telephone 301–436–8590.

(229) **Delaware:**

(230) Wilmington: Federal Bldg., Room 1218A, 844 King Street 19801.

(231) **District of Columbia:**

(232) Washington: Dulles International Airport, Chantilly, Virginia 20041.

(233) **Maryland:**

(234) Baltimore: Appraisers Stores Bldg., Room 506, 103 South Gay Street 21202.

(235) **Pennsylvania:**

(236) Philadelphia: 1004 Customhouse, Second and Chestnut Streets 19106.

(237) **Virginia:**

(238) Chantilly: Dulles International Airport 20041.

(239) Newport News: P.O. Box 942, 23607.

(240) Norfolk: Federal Bldg., Room 311, 200 Granby Mall 23510.

Animal Import Centers:

(241) Honolulu, Hawaii: P.O. Box 50001, 96850.

(242) Miami, Fla.: 8120 NW 53rd Street, Suite 102, 33166.

(243) Rock Tavern, NY: New York Animal Import Center, Stewart Airport, Rural Route 1, Box 74, 12575.

Immigration and Naturalization Service Offices

(244) Philadelphia, PA: U.S. Courthouse, Room 1321, 601 Market Street 19106.

(245) Baltimore, MD: E.A. Garmatz Federal Bldg., 101 West Lombard Street 21201.

(246) Washington, DC: 25 E Street NW. 20013.

(247) Norfolk, VA: Norfolk Federal Bldg., Room 439, 200 Granby Mall 23510.

Food and Drug Administration (FDA) Regional Offices

(248) **Northeast Region** (New York, Maine, Connecticut, New Maine, Connecticut, New Hampshire, Vermont, Rhode Island): 830 Third Avenue, Brooklyn, NY 11232.

(249) **Mid–Atlantic Region** (Delaware, Pennsylvania, Virginia, Maryland, Ohio, New Jersey): U.S. Customhouse, 2nd and Chestnut Streets, Philadelphia, PA 19106.

(250) **Southeast Region** (South Carolina, North Carolina, Georgia, Alabama, Louisiana, Mississippi, Florida, Puerto Rico): 60 Eight Street, N.E., Atlanta, GA 30309.

(251) **Midwest Region** (Illinois, Indiana, Michigan, Wisconsin): 20 N. Michigan Avenue, Chicago, IL 60602.

(252) **Southwest Region (Texas):** 3032 Bryan Street, Dallas, TX 75204.

(253) **Pacific Region** (California, Hawaii, Alaska, Washington, Oregon): 50 U.N. Plaza, San Francisco, CA 94102.

Federal Communications Commission Offices

(254) **District field offices**

(255) Philadelphia, PA: One Oxford Valley Office Bldg., Room 404, 2300 East Lincoln Hwy., Langhorne, PA 19047–1859.

(256) Columbia, MD: 9200 Farm House Lane, Columbia, MD 21046.

(257) Atlanta, GA: 3575 Koger Blvd., Ste. 320, Duluth, GA 30096–4958.

(258) Telephone toll–free: 888–225–5322; (888–CALL–FCC) to report radio communications interference issues.

Radio shore stations providing medical advice

(259) 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.)

(260) **NMN**, Porthsmouth, VA, U.S. Coast Guard on HF single-sideband radiotelephone channels 424(4134 kHz), 601(6200 kHz), 816(8240 kHz), or 1205(12242 kHz).

Measured Courses

(261) 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:

(262) Brickhouse Bar, Chesapeake Bay; 12270

(263) Curtis Point, Chesapeake Bay; 12270

(264) Piney Neck Point, Prospect Bay; 12270

(265) Rock Point, Patapsco River; 12278

(266) 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 Data
- Meteorological Data
- Atmospheric Pressure Conversion
- Mean Surface Water Temperatures and Densities
- Table for Estimating Time of Transit
- Determination of Wind Speed by Sea Condition
- Distances Between Ports
- Distances of Visibility for Objects Having Various Elevations
- Conversion of Degrees to Points
- Standard Abbreviations Used in Broadcasts
- Conversion Factors
- Measurements and Equivalencies
- Tips for Boating Clean and Green

CLIMATOLOGICAL DATA – NEW YORK (KENNEDY AIRPORT), NY (40°39'N, 73°47'W) 13 feet (4 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE (station pressure reduced to sea level)														
Mean (millibars)	1018.0	1017.4	1015.9	1015.1	1015.8	1014.9	1015.7	1016.6	1018.5	1018.9	1017.9	1018.5	1016.9	48
TEMPERATURE (°F)														
Mean	32.5	33.5	41.2	50.8	60.6	70.0	76.0	75.0	67.8	57.2	47.5	37.5	54.2	34
Mean daily maximum	38.6	39.9	48.1	58.3	68.1	77.4	83.1	82.1	75.0	64.5	54.0	43.5	61.1	34
Mean daily minimum	26.0	26.6	33.8	42.8	52.5	62.1	68.5	67.5	60.1	49.5	40.6	31.1	46.8	34
Extreme (highest)	69	68	85	90	99	99	104	101	98	85	77	70	104	34
Extreme (lowest)	-2	0	7	20	34	45	55	46	41	30	19	2	-2	34
RELATIVE HUMIDITY														
Average percentage	54.7	48.7	33.8	26.1	32.5	23.9	31.7	41.0	59.6	63.5	54.0	60.4	44.2	47
CLOUD COVER														
Percent of time clear	23.6	24.7	23.7	22.3	18.4	18.2	17.5	19.2	24.4	29.3	22.8	22.9	22.2	48
Percent of time scattered	16.1	16.6	16.3	16.7	18.8	21.7	25.0	24.7	21.2	19.9	17.9	17.3	19.3	48
Percent of time broken	14.2	14.5	16.0	17.5	20.0	22.3	23.8	22.7	20.1	17.1	16.7	14.7	18.3	48
Percent of time overcast	42.0	40.5	40.2	38.9	37.7	32.3	27.9	28.1	29.6	29.1	37.9	41.2	35.5	48
PRECIPITATION (inches)														
Mean amount	3.2	2.8	3.5	3.6	3.9	3.0	3.7	3.5	3.3	2.8	3.4	3.5	40.8	34
Greatest amount	8.3	4.8	8.1	9.5	10.7	8.0	8.4	8.3	9.6	6.5	9.5	6.7	59.1	34
Least amount	0.4	1.0	0.9	1.3	0.6	T	0.5	0.2	0.9	0.9	0.3	0.6	25.3	34
Maximum amount (24 hours)	2.5	2.4	2.4	3.1	2.8	2.8	3.2	3.7	4.4	3.2	3.9	2.5	4.4	34
Mean number of days	15	13	16	16	15	14	13	13	12	11	14	16	168	34
SNOW														
Mean amount	6.7	8.0	3.4	0.5	0.0	0.0	0.0	0.0	0.0	T	0.4	3.4	22.4	34
Greatest amount	20.1	24.7	15.5	8.2	0.0	0.0	0.0	0.0	0.0	T	3.7	22.4	48.9	34
Least amount	T	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	1.3	34
Maximum amount (24 hours)	13.0	19.9	9.0	8.0	0.0	0.0	0.0	0.0	0.0	T	3.2	18.0	19.9	34
Mean number of days	8	8	5	1	0	0	0	0	0	Miss	2	6	30	34
WIND														
Percentage with gales	0.06	0.11	0.05	0.08	0.01	0.03	0.00	0.02	0.04	0.02	0.10	0.10	0.18	48
Mean wind speed (knots)	11.4	11.5	11.8	11.2	9.9	9.4	8.9	8.7	9.0	9.5	10.6	11.0	10.2	48
Direction (percentage of observations)														
North	7.3	7.6	7.3	6.3	5.4	4.9	5.0	5.9	6.7	7.2	6.2	7.1	6.4	48
North Northeast	5.3	6.6	6.0	5.2	4.8	4.3	4.1	5.9	6.9	7.6	5.9	6.2	5.7	48
Northeast	5.4	5.6	5.5	4.7	5.3	3.9	4.0	5.3	7.3	7.2	5.4	6.3	5.5	48
East Northeast	4.2	4.9	5.4	4.6	4.7	3.6	3.2	4.3	6.5	5.3	4.9	4.7	4.7	48
East	2.8	3.7	4.1	4.7	4.8	3.9	2.9	2.9	4.0	3.6	3.2	2.6	3.6	48
East Southeast	1.4	1.9	3.2	4.1	4.9	3.8	3.1	2.7	3.1	2.4	2.2	1.1	2.8	48
Southeast	1.1	1.7	2.5	3.7	4.6	4.0	3.2	4.9	2.7	2.4	2.0	1.3	2.7	48
South Southeast	1.3	2.4	3.7	5.2	6.6	5.9	6.2	10.4	4.9	3.1	2.5	1.5	4.1	48
South	4.5	5.4	8.5	12.4	14.8	17.6	16.7	14.3	10.4	7.9	6.7	4.0	10.3	48
South Southwest	5.0	5.3	5.9	7.6	9.8	13.5	14.4	12.8	9.5	7.7	6.0	4.7	8.5	48
Southwest	5.9	5.5	4.1	5.2	6.3	8.0	10.0	10.3	7.9	7.9	7.2	6.7	7.1	48
West Southwest	9.7	7.9	5.6	5.9	6.1	7.2	8.7	8.5	7.3	8.4	10.0	10.6	8.0	48
West	10.8	8.3	6.1	5.4	4.4	4.4	4.8	5.1	5.2	6.6	9.1	10.5	6.7	48
West Northwest	12.5	10.2	9.1	6.7	4.1	3.9	3.8	3.6	4.4	6.8	9.8	11.6	7.2	48
Northwest	13.3	12.6	12.7	9.5	5.8	4.9	4.1	4.3	5.4	7.6	10.1	12.2	8.5	48
North Northwest	8.4	9.4	8.9	7.2	5.8	4.9	4.5	4.3	6.1	6.6	7.6	8.3	6.8	48
Calm	1.3	0.9	1.1	1.3	1.8	1.2	1.5	1.7	1.4	1.7	1.3	1.0	1.4	48
Direction (mean speed, knots)														
North	10.4	10.9	11.2	10.9	10.0	9.4	8.4	8.6	9.3	9.3	9.4	10.3	9.9	48
North Northeast	10.3	10.2	11.5	11.2	10.0	9.6	8.4	8.9	9.2	9.3	9.6	9.9	9.8	48
Northeast	10.0	10.6	11.2	11.0	9.8	9.0	7.7	8.2	8.4	9.3	9.3	9.6	9.5	48
East Northeast	8.6	9.6	10.8	10.0	8.9	7.7	6.9	7.0	8.0	8.4	8.5	8.4	8.6	48
East	7.8	8.9	10.0	9.3	8.4	7.4	6.5	7.1	7.3	8.0	8.6	8.1	8.2	48
East Southeast	7.8	8.6	9.6	9.7	8.5	8.2	7.1	7.7	8.0	8.6	9.4	10.0	8.6	48
Southeast	9.3	9.7	10.2	9.7	9.2	9.3	9.2	8.8	9.1	9.3	10.5	9.9	9.4	48
South Southeast	10.7	10.2	10.5	10.7	10.1	9.5	9.7	9.4	9.7	9.3	10.2	11.6	10.0	48
South	9.7	9.2	10.9	11.3	10.9	10.4	10.2	9.9	10.0	9.2	10.3	9.7	10.3	48
South Southwest	10.0	9.8	9.9	10.6	9.9	9.6	9.7	9.4	9.4	9.3	9.5	9.8	9.7	48
Southwest	9.5	9.6	10.0	9.4	9.3	8.6	8.4	8.2	8.9	9.0	9.5	9.7	9.1	48
West Southwest	10.4	10.6	11.5	10.7	9.3	8.7	8.2	8.4	8.4	9.2	10.3	10.0	9.6	48
West	13.1	13.0	13.1	12.6	10.2	8.7	8.3	8.3	9.1	10.1	11.7	11.8	11.2	48
West Northwest	14.0	14.4	15.1	13.9	12.3	11.2	10.3	9.4	10.2	11.6	13.0	13.6	13.0	48
Northwest	14.3	14.8	14.6	14.1	12.7	11.9	10.4	10.3	11.0	12.1	13.2	13.6	13.3	48
North Northwest	12.1	13.0	12.8	12.5	11.5	11.3	9.7	9.8	10.5	10.7	11.7	11.9	11.7	48
VISIBILITY														
Mean number of days with fog	10	9	11	11	13	12	13	12	11	10	11	10	133	34

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – NEWARK, NJ (40°42'N, 74°10'W) 26 feet (8 m)														
WEATHER ELEMENTS	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**YEAR**	**YEARS OF RECORD**
SEA LEVEL PRESSURE (station pressure reduced to sea level)														
Mean (millibars)	1018.3	1017.9	1016.1	1015.1	1015.6	1015.0	1015.5	1016.5	1018.5	1019.1	1018.0	1018.9	1017.0	48
TEMPERATURE (°F)														
Mean	31.6	33.3	41.6	52.2	62.8	72.0	77.2	75.6	68.0	57.3	46.7	35.7	54.7	61
Mean daily maximum	38.5	40.7	49.7	61.3	72.1	81.1	86.0	84.1	76.7	66.2	54.3	42.5	63.0	61
Mean daily minimum	24.2	25.4	33.1	42.7	52.9	62.3	68.0	66.5	58.8	47.9	38.6	28.4	45.9	61
Extreme (highest)	74	76	89	94	98	102	105	103	105	93	85	72	105	61
Extreme (lowest)	-8	-7	6	16	33	41	52	45	35	25	15	-1	-8	61
RELATIVE HUMIDITY														
Average percentage	57.8	54.0	35.9	26.2	31.0	24.8	30.0	39.7	59.8	65.7	54.9	64.5	45.2	48
CLOUD COVER														
Percent of time clear	24.1	24.2	23.8	21.3	18.3	18.5	18.5	20.1	23.5	29.8	24.1	22.9	22.4	48
Percent of time scattered	16.5	17.5	18.1	18.9	21.2	25.5	25.9	26.8	23.3	21.2	18.5	17.3	20.9	48
Percent of time broken	14.6	14.5	15.5	18.4	20.1	22.0	24.4	22.7	20.1	17.2	16.9	14.8	18.5	48
Percent of time overcast	44.8	43.7	42.7	41.4	40.3	33.9	31.2	30.4	33.1	31.8	40.5	45.1	38.2	48
PRECIPITATION (inches)														
Mean amount	3.4	2.9	4.0	3.6	3.8	3.2	4.2	4.1	3.6	3.0	3.7	3.4	43.4	61
Greatest amount	10.1	5.8	11.4	11.1	10.2	6.4	9.9	11.8	10.2	8.2	11.5	9.4	65.5	61
Least amount	0.4	0.7	1.1	0.9	0.5	0.0	0.8	0.3	0.1	0.2	0.5	0.2	26.0	61
Maximum amount (24 hours)	2.9	2.3	2.7	2.8	3.9	2.9	3.5	5.9	4.7	3.9	6.7	2.7	6.7	61
Mean number of days	16	14	16	16	16	15	14	13	12	12	14	16	174	61
SNOW														
Mean amount	8.9	9.2	3.7	0.7	T	0.0	0.0	0.0	0.0	T	0.6	3.9	27.0	61
Greatest amount	31.6	33.4	26.0	13.8	T	0.0	0.0	0.0	0.0	0.3	5.7	29.1	33.4	61
Least amount	0.1	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	1.9	61
Maximum amount (24 hours)	27.4	20.0	17.6	12.8	T	0.0	0.0	0.0	0.0	0.3	5.7	25.9	27.4	61
Mean number of days	11	9	7	1	Miss	0	0	0	0	Miss	2	7	37	61
WIND														
Percentage with gales	0.01	0.02	0.01	0.03	0.01	0.01	0.00	0.03	0.03	0.03	0.04	0.03	0.02	48
Mean wind speed (knots)	9.7	9.9	10.3	9.7	8.8	8.3	7.8	7.6	7.9	8.3	8.9	9.4	8.9	48
Direction (percentage of observations)														
North	5.8	6.4	6.5	5.5	5.0	4.4	5.0	5.4	7.1	6.2	5.8	6.0	5.8	48
North Northeast	9.3	8.8	8.4	6.5	6.4	5.8	5.6	7.6	10.1	10.6	9.1	9.9	8.2	48
Northeast	5.6	6.7	6.1	5.4	6.1	4.4	4.0	5.0	5.9	6.2	4.6	5.3	5.4	48
East Northeast	2.5	3.3	4.5	4.1	3.9	2.6	2.5	2.5	3.4	3.5	2.7	2.3	3.2	48
East	1.7	2.4	3.4	4.1	4.4	3.4	2.3	2.5	2.9	2.5	2.5	1.6	2.8	48
East Southeast	1.3	2.2	3.9	5.7	6.6	5.3	3.3	3.1	3.6	3.0	2.5	1.2	3.5	48
Southeast	1.1	1.8	3.7	5.5	6.9	6.4	5.5	4.9	4.3	3.5	2.5	1.3	4.0	48
South Southeast	1.7	2.2	3.5	4.5	5.8	6.2	6.8	5.8	4.7	3.5	2.5	2.0	4.1	48
South	3.3	3.9	4.1	4.8	5.6	6.8	7.9	7.7	5.9	4.6	4.6	3.6	5.2	48
South Southwest	5.7	5.3	4.8	6.3	7.7	8.9	9.3	9.0	8.2	8.5	7.4	6.1	7.3	48
Southwest	9.8	7.7	6.1	8.3	10.3	13.1	13.0	13.6	12.1	11.8	11.8	10.7	10.7	48
West Southwest	11.5	9.1	7.0	7.1	7.5	8.9	10.3	9.3	7.7	9.0	9.6	10.5	9.0	48
West	9.7	8.1	6.6	5.9	4.7	5.8	6.6	6.2	6.1	6.7	8.6	9.7	7.0	48
West Northwest	11.5	10.6	10.5	8.6	5.7	6.0	6.4	5.8	5.6	6.3	9.1	11.2	8.1	48
Northwest	11.1	12.5	12.2	9.7	6.7	6.1	6.0	5.2	6.1	6.7	9.2	10.4	8.5	48
North Northwest	6.7	7.3	8.0	6.7	5.3	4.6	4.2	4.7	4.9	5.7	5.5	6.5	5.8	48
Calm	1.9	1.9	1.1	1.2	1.5	1.4	1.7	1.7	1.7	2.0	2.2	1.8	1.7	48
Direction (mean speed, knots)														
North	9.2	10.1	10.5	9.9	8.8	8.6	7.7	7.8	8.4	8.5	8.5	9.0	9.0	48
North Northeast	9.5	9.6	9.7	9.6	9.4	8.9	7.7	8.3	8.6	8.9	8.8	9.0	9.0	48
Northeast	9.3	9.3	9.8	9.9	9.1	8.4	7.6	8.0	8.6	8.6	8.4	8.9	8.9	48
East Northeast	7.8	8.4	9.1	9.0	8.1	7.9	6.9	7.0	7.8	8.5	7.9	8.2	8.2	48
East	5.4	6.2	7.3	6.9	6.3	6.3	5.7	5.9	6.2	6.8	6.9	5.7	6.4	48
East Southeast	6.3	6.8	8.1	8.2	7.4	7.1	6.8	6.7	7.4	7.6	7.9	7.6	7.4	48
Southeast	6.9	7.1	8.1	8.4	8.0	7.9	7.7	7.7	7.8	7.5	7.6	6.9	7.8	48
South Southeast	6.4	7.3	7.7	7.7	7.7	7.5	7.6	7.8	7.6	6.9	7.1	7.4	7.5	48
South	5.9	6.3	6.9	7.1	7.2	7.1	7.1	7.1	6.9	6.4	6.7	6.0	6.8	48
South Southwest	7.3	7.7	8.1	8.6	8.1	7.9	7.6	7.4	7.3	7.1	7.4	7.5	7.6	48
Southwest	8.3	8.7	9.6	9.2	8.7	8.4	7.8	7.5	7.4	7.7	8.0	8.0	8.2	48
West Southwest	9.7	9.6	10.3	9.9	9.5	8.6	8.1	7.7	7.7	8.2	9.1	8.8	8.9	48
West	10.1	10.3	10.9	10.3	9.3	8.3	7.8	6.9	7.6	8.2	9.4	9.7	9.2	48
West Northwest	12.2	12.5	13.0	12.3	10.7	9.6	9.1	8.7	8.8	10.1	11.6	12.0	11.2	48
Northwest	13.0	13.5	13.8	13.5	11.9	11.1	9.9	9.6	10.2	11.1	12.4	12.9	12.3	48
North Northwest	12.0	12.3	12.1	12.2	11.1	10.6	9.5	9.2	9.9	10.7	11.1	11.5	11.2	48
VISIBILITY														
Mean number of days with fog	9	9	10	9	11	10	9	10	11	11	9	10	118	61

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – ATLANTIC CITY, NJ (39°27'N, 74°34'W) 118 feet (36 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE (station pressure reduced to sea level)														
Mean (millibars)	1018.3	1017.8	1016.3	1014.8	1015.9	1014.9	1015.6	1016.7	1018.2	1018.7	1018.7	1019.0	1017.1	38
TEMPERATURE (°F)														
Mean	31.7	33.6	41.4	51.0	60.7	69.8	75.3	73.7	66.6	55.5	46.1	36.1	53.7	40
Mean daily maximum	40.7	42.8	51.1	61.4	71.2	80.2	84.7	83.1	76.7	66.3	55.8	45.3	63.5	40
Mean daily minimum	22.3	23.9	31.2	40.0	49.6	59.0	65.3	63.7	56.1	44.3	35.9	26.5	43.3	40
Extreme (highest)	78	75	85	94	99	106	104	100	99	90	81	75	106	40
Extreme (lowest)	-10	-11	5	12	25	37	42	40	32	20	10	-2	-11	40
RELATIVE HUMIDITY														
Average percentage	58.5	52.9	37.8	22.8	34.2	23.9	30.5	41.8	57.4	62.1	61.6	65.4	45.8	40
CLOUD COVER														
Percent of time clear	25.0	24.9	26.0	22.6	18.6	17.3	16.8	18.4	24.4	30.3	24.3	25.5	22.8	37
Percent of time scattered	15.3	14.2	14.9	14.7	18.1	20.5	21.9	22.4	200	18.3	17.6	15.3	17.8	37
Percent of time broken	14.6	13.8	15.5	18.3	21.3	25.8	27.2	25.1	20.4	18.2	17.0	14.2	19.4	37
Percent of time overcast	40.7	43.2	39.1	38.6	36.0	30.2	27.6	27.9	29.9	28.7	35.6	40.5	34.7	37
PRECIPITATION (inches)														
Mean amount	3.3	2.9	3.9	3.3	3.2	2.5	4.3	4.6	3.0	2.9	3.3	3.3	40.9	40
Greatest amount	7.1	5.7	9.2	7.5	6.7	6.3	13.0	16.0	6.2	6.6	9.6	7.3	55.3	40
Least amount	0.5	0.8	0.7	0.8	0.5	0.6	0.5	0.4	0.4	0.1	0.6	0.6	25.2	40
Maximum amount (24 hours)	2.4	2.5	2.6	2.9	4.1	2.7	6.4	11.1	3.8	2.4	2.8	1.9	11.1	40
Mean number of days	14	13	15	14	15	12	13	12	11	10	13	15	157	40
SNOW														
Mean amount	5.3	5.9	2.1	0.4	T	0.0	0.0	0.0	0.0	T	0.4	2.3	16.5	38
Greatest amount	20.3	35.2	17.6	3.9	T	0.0	0.0	0.0	0.0	T	7.8	9.3	50.1	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	0.5	38
Maximum amount (24 hours)	14.3	16.6	11.5	3.9	T	0.0	0.0	0.0	0.0	T	7.8	6.7	16.6	38
Mean number of days	7	7	4	1	Miss	0	0	0	0	Miss	1	5	25	40
WIND														
Percentage with gales	0.02	0.05	0.03	0.01	0.00	0.00	0.00	0.01	0.05	0.00	0.01	0.03	0.02	40
Mean wind speed (knots)	9.5	9.7	10.2	10.1	8.7	7.9	7.2	6.9	7.2	7.7	9.0	9.1	8.6	40
Direction (percentage of observations)														
North	6.2	6.3	5.5	4.6	4.4	4.0	4.2	5.7	7.5	7.5	5.7	6.9	5.7	40
North Northeast	3.7	3.8	3.5	2.9	3.3	2.5	2.7	3.9	5.0	4.5	3.7	4.1	3.6	40
Northeast	3.2	4.1	4.2	3.4	3.8	3.3	2.2	3.3	4.4	4.1	3.0	3.0	3.5	40
East Northeast	2.8	4.0	5.2	4.5	5.6	4.0	2.6	4.0	5.1	4.3	3.4	2.9	4.0	40
East	2.4	2.9	3.9	4.9	5.2	4.2	3.9	3.4	4.4	3.2	2.8	2.2	3.6	40
East Southeast	2.0	2.5	3.2	4.1	5.0	4.1	3.6	3.5	4.2	2.9	2.6	2.1	3.3	40
Southeast	1.7	2.4	3.4	3.8	4.2	3.4	4.2	3.3	3.4	3.1	2.4	1.6	3.1	40
South Southeast	2.3	2.9	4.0	5.6	6.0	6.7	6.1	5.4	4.2	3.5	3.2	2.1	4.3	40
South	4.4	5.1	7.4	9.8	10.7	13.3	12.8	10.8	7.6	6.0	6.6	4.4	8.3	40
South Southwest	5.6	5.9	6.4	7.6	9.0	11.1	11.1	10.3	7.9	6.3	6.9	6.3	7.9	40
Southwest	5.7	5.3	4.7	5.5	6.8	8.6	9.7	9.4	7.3	6.8	6.7	6.6	6.9	40
West Southwest	7.6	6.8	5.1	6.4	6.6	8.2	8.6	7.7	6.3	7.6	7.7	7.3	7.2	40
West	11.4	9.4	8.0	7.3	6.2	5.6	6.3	5.3	5.0	6.8	9.4	10.4	7.6	40
West Northwest	15.8	13.5	12.1	9.7	7.0	5.5	5.3	5.5	6.0	8.3	12.1	14.4	9.6	40
Northwest	12.1	12.1	11.1	9.4	6.7	6.3	5.5	6.0	6.8	8.8	11.3	11.9	9.0	40
North Northwest	7.3	8.0	7.9	6.7	5.0	4.4	4.9	4.8	6.8	7.0	6.5	7.5	6.4	40
Calm	5.8	5.1	4.2	3.6	4.4	4.9	6.3	7.9	8.0	9.3	5.9	6.4	6.0	40
Direction (mean speed, knots)														
North	8.1	8.9	9.1	9.2	7.8	7.5	6.9	6.8	7.2	7.8	8.2	8.0	8.0	40
North Northeast	7.9	8.9	9.2	9.1	7.9	6.7	6.6	6.9	7.4	8.3	7.9	7.8	7.9	40
Northeast	10.0	8.8	10.2	10.3	8.8	8.2	6.8	7.8	8.4	9.0	9.4	8.1	8.9	40
East Northeast	10.4	10.9	11.4	10.8	9.7	8.5	7.7	7.9	8.9	9.4	9.7	9.9	9.6	40
East	9.3	9.1	10.1	10.2	9.0	7.6	7.2	7.3	8.0	8.2	8.7	9.1	8.6	40
East Southeast	7.9	8.3	8.7	9.2	8.2	7.6	7.2	6.8	7.7	7.9	8.6	7.5	8.0	40
Southeast	7.9	7.6	9.0	8.8	8.3	7.4	7.3	7.0	7.7	8.0	8.4	7.3	7.9	40
South Southeast	9.2	8.9	9.0	9.7	9.0	8.3	8.0	7.7	8.2	8.2	9.4	8.4	8.6	40
South	9.9	9.3	10.6	10.8	10.4	9.2	8.9	8.6	8.5	8.8	9.7	9.2	9.5	40
South Southwest	9.1	9.6	10.3	10.6	9.4	8.6	8.3	8.1	8.3	8.4	9.4	9.4	9.0	40
Southwest	8.6	9.2	8.9	9.0	8.2	7.7	7.4	7.2	7.5	7.8	8.8	8.8	8.1	40
West Southwest	9.1	9.2	9.4	9.7	8.6	8.2	7.7	7.3	7.0	8.1	8.7	8.8	8.4	40
West	11.2	11.5	11.5	11.3	9.7	8.5	7.8	7.6	7.6	9.0	10.0	10.5	10.0	40
West Northwest	12.1	12.4	12.8	12.2	10.3	8.8	8.0	7.2	8.1	9.2	11.2	11.9	11.0	40
Northwest	11.2	11.9	12.2	11.5	9.3	8.2	7.1	6.7	7.2	8.6	10.5	11.1	10.1	40
North Northwest	9.3	10.1	10.1	10.1	8.8	8.0	6.9	6.7	7.3	8.2	8.9	9.4	8.8	40
VISIBILITY														
Mean number of days with fog	12	11	13	13	15	16	19	19	16	14	12	12	172	40

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – WILMINGTON, DE (39°40'N, 75°36'W) 79 feet (24 m)														
WEATHER ELEMENTS	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**YEAR**	**YEARS OF RECORD**
SEA LEVEL PRESSURE (station pressure reduced to sea level)														
Mean (millibars)	1018.7	1018.5	1016.6	1015.4	1015.8	1015.2	1015.9	1016.8	1018.5	1019.0	1018.8	1019.5	1017.4	48
TEMPERATURE (°F)														
Mean	31.8	34.2	42.3	52.7	62.6	71.8	76.5	74.9	67.8	56.5	46.0	36.1	54.5	50
Mean daily maximum	39.6	42.5	51.4	63.0	72.8	81.6	85.9	84.0	77.4	66.5	55.0	44.0	63.8	50
Mean daily minimum	23.6	25.4	32.7	42.0	51.9	61.4	66.9	65.2	57.7	45.9	36.5	27.6	44.8	50
Extreme (highest)	75	78	86	94	96	100	102	101	100	91	85	74	102	50
Extreme (lowest)	-14	-6	2	18	30	41	48	43	36	24	14	-7	-14	50
RELATIVE HUMIDITY														
Average percentage	62.4	60.2	41.3	28.7	33.4	26.7	34.2	43.2	60.1	65.1	63.5	69.8	49.0	50
CLOUD COVER														
Percent of time clear	24.4	27.1	25.7	22.1	20.0	21.1	19.3	21.9	27.4	31.3	25.8	25.8	24.3	47
Percent of time scattered	13.4	13.7	14.9	15.1	17.6	21.2	23.0	21.3	18.5	17.0	15.1	14.6	17.2	47
Percent of time broken	11.7	11.4	12.0	14.7	15.9	19.7	20.5	19.7	15.1	14.2	13.4	11.2	15.0	47
Percent of time overcast	47.1	44.3	43.6	43.4	41.9	32.5	31.4	31.6	34.2	33.3	41.3	45.2	39.1	47
PRECIPITATION (inches)														
Mean amount	3.0	2.8	3.7	3.3	3.6	3.3	4.2	3.7	3.6	2.8	3.3	3.4	41.4	50
Greatest amount	8.4	7.0	7.5	6.8	7.3	7.4	12.6	12.0	9.5	8.0	7.8	7.9	54.7	50
Least amount	0.5	0.8	0.8	0.3	0.2	0.2	0.1	0.2	0.8	0.2	0.4	0.1	24.9	50
Maximum amount (24 hours)	1.9	2.2	2.6	2.2	2.7	4.1	6.6	3.7	4.6	3.6	2.7	2.0	6.6	50
Mean number of days	15	14	16	16	16	14	14	13	12	11	14	15	170	50
SNOW														
Mean amount	6.8	6.2	3.3	0.2	T	0.0	0.0	0.0	0.0	0.1	0.9	3.2	20.7	48
Greatest amount	26.2	27.5	20.3	2.6	T	0.0	0.0	0.0	0.0	2.5	11.9	21.5	48.8	48
Least amount	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	48
Maximum amount (24 hours)	22.0	14.9	13.0	1.8	T	0.0	0.0	0.0	0.0	2.5	6.8	12.4	22.0	48
Mean number of days	9	7	5	1	Miss	0	0	0	0	Miss	2	6	30	50
WIND														
Percentage with gales	0.01	0.04	0.03	0.00	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.02	0.03	50
Mean wind speed (knots)	8.5	8.9	9.5	9.1	7.8	7.2	6.7	6.4	6.7	7.0	7.9	8.1	7.8	50
Direction (percentage of observations)														
North	5.2	6.0	5.6	4.8	4.8	4.8	5.1	6.1	7.7	6.8	5.2	5.0	5.6	50
North Northeast	3.9	3.8	4.1	3.5	3.5	3.1	3.5	4.3	5.0	4.9	3.4	3.5	3.9	50
Northeast	4.6	4.9	4.9	4.1	4.5	3.5	2.7	3.3	4.4	4.7	3.9	4.6	4.2	50
East Northeast	4.2	5.6	6.3	5.9	5.6	3.7	2.9	3.6	5.0	5.2	4.4	4.6	4.8	50
East	2.3	2.9	3.8	4.1	4.2	3.1	2.4	2.8	3.8	2.8	2.6	2.6	3.1	50
East Southeast	1.8	2.3	2.5	3.1	3.4	2.7	2.5	2.4	2.8	2.2	2.1	1.7	2.4	50
Southeast	2.0	2.3	3.0	3.6	4.0	4.3	4.0	4.2	3.7	3.0	2.6	1.8	3.2	50
South Southeast	3.2	4.0	5.9	6.6	6.7	7.7	6.8	5.8	5.3	4.4	4.4	3.3	5.3	50
South	5.1	5.3	6.2	7.8	9.1	10.5	9.5	9.3	7.7	6.4	6.2	4.9	7.3	50
South Southwest	4.3	4.0	3.8	4.7	5.7	6.6	6.7	6.7	5.4	4.6	4.8	4.8	5.2	50
Southwest	5.1	4.8	4.2	5.7	7.0	7.6	8.5	7.3	6.3	5.6	5.7	5.3	6.1	50
West Southwest	6.7	5.7	4.6	5.7	6.5	8.1	8.5	7.0	5.8	6.2	7.0	7.1	6.6	50
West	8.3	7.0	6.0	6.5	6.7	6.5	6.8	6.3	5.1	6.5	8.4	8.4	6.9	50
West Northwest	15.3	13.9	13.6	11.5	8.4	8.2	8.5	8.2	7.2	9.5	12.5	14.5	10.9	50
Northwest	15.0	15.1	14.2	11.8	8.9	8.6	9.2	8.7	9.7	11.3	13.8	14.5	11.7	50
North Northwest	7.5	7.3	7.3	6.8	5.6	5.4	6.0	6.5	7.7	7.9	6.5	6.7	6.8	50
Calm	5.6	5.0	4.1	3.8	5.5	5.8	6.6	7.7	7.2	7.8	6.5	6.6	6.0	50
Direction (mean speed, knots)														
North	7.9	8.5	8.6	8.7	7.4	6.9	6.6	6.5	7.0	7.3	7.4	7.7	7.5	50
North Northeast	8.6	8.6	8.7	8.4	8.2	7.4	7.0	7.4	7.5	8.2	8.5	8.2	8.0	50
Northeast	9.3	9.3	9.8	9.3	8.6	8.0	7.3	7.5	8.5	8.8	9.0	8.9	8.8	50
East Northeast	9.4	9.6	10.2	9.7	8.8	8.6	7.4	7.8	8.7	9.3	9.1	9.1	9.1	50
East	6.5	7.5	8.5	8.6	7.7	7.5	6.7	6.8	7.6	7.4	7.5	7.0	7.5	50
East Southeast	6.1	5.9	7.5	7.6	7.0	7.1	6.6	6.2	6.8	6.5	7.4	6.2	6.8	50
Southeast	6.1	6.9	7.5	7.7	7.3	7.1	6.8	6.7	6.7	6.9	7.2	6.1	7.0	50
South Southeast	7.5	8.0	9.5	9.6	9.2	8.7	8.5	8.2	8.2	7.6	8.5	7.7	8.6	50
South	7.2	7.7	8.7	9.2	8.6	8.2	8.0	7.7	7.6	7.3	7.7	7.3	8.0	50
South Southwest	7.3	7.8	9.7	9.4	8.1	7.2	7.3	6.8	7.0	7.2	8.1	7.4	7.7	50
Southwest	7.5	7.9	9.1	8.7	8.1	7.4	7.3	6.8	7.2	7.1	7.3	7.5	7.6	50
West Southwest	7.8	7.8	8.4	8.2	7.5	7.4	7.2	6.6	6.9	7.2	7.5	7.6	7.5	50
West	9.1	9.2	9.4	8.8	7.5	6.8	6.3	6.2	6.5	7.1	8.2	8.4	7.9	50
West Northwest	11.0	11.6	11.8	10.7	8.7	7.7	6.9	6.5	6.8	8.0	9.8	10.1	9.6	50
Northwest	10.7	11.3	11.9	11.2	8.9	8.1	7.2	6.5	6.9	7.9	9.8	10.4	9.6	50
North Northwest	9.4	10.1	10.2	9.9	8.4	7.6	6.8	6.4	6.7	7.2	8.3	9.0	8.4	50
VISIBILITY														
Mean number of days with fog	12	11	13	12	15	15	16	17	16	15	13	13	168	50

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – PHILADELPHIA, PA (39°53'N, 75°15'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 (station pressure reduced to sea level)														
Mean (millibars)	1018.8	1017.8	1016.4	1015.6	1015.6	1015.2	1015.8	1016.7	1018.5	1019.0	1018.4	1019.0	1017.2	56
TEMPERATURE (°F)														
Mean	32.1	34.3	42.4	53.3	63.3	72.4	77.4	75.8	68.4	57.2	46.6	36.5	55.1	50
Mean daily maximum	39.3	42.1	51.2	63.2	73.2	82.2	86.5	84.7	77.5	66.7	55.0	43.7	63.9	50
Mean daily minimum	24.3	26.0	33.2	42.8	52.8	62.1	27.7	66.4	58.8	47.2	37.6	28.7	45.7	50
Extreme (highest)	74	74	85	94	97	100	104	101	100	89	84	72	104	50
Extreme (lowest)	-7	-4	7	19	28	44	51	44	35	25	15	1	-7	50
RELATIVE HUMIDITY														
Average percentage	63.0	52.6	39.0	31.0	31.5	26.9	32.8	41.5	59.7	64.6	59.0	65.5	47.2	57
CLOUD COVER														
Percent of time clear	22.5	25.0	23.1	21.2	17.7	17.8	16.6	19.3	23.4	29.8	23.3	23.4	21.9	50
Percent of time scattered	15.2	15.2	16.2	16.1	18.3	22.3	22.8	23.1	20.5	18.5	16.3	15.4	18.3	50
Percent of time broken	13.8	13.5	14.3	17.0	18.6	21.8	23.0	21.9	18.2	15.7	16.3	13.1	17.3	50
Percent of time overcast	44.7	42.6	42.2	40.8	40.2	32.8	31.8	29.8	32.9	31.4	39.2	43.9	37.6	50
PRECIPITATION (inches)														
Mean amount	3.1	2.7	3.7	3.4	3.6	3.4	4.2	3.9	3.3	2.6	3.3	3.4	41.0	50
Greatest amount	8.8	6.4	7.0	8.1	7.4	7.8	10.4	9.7	8.7	5.9	9.0	8.4	56.4	50
Least amount	0.4	0.7	0.6	0.5	0.4	0.1	0.6	0.4	0.4	0.0	0.3	0.2	29.3	50
Maximum amount (24 hours)	2.2	1.9	2.2	2.4	2.4	4.6	4.3	4.7	4.6	3.8	3.9	0.3	4.7	50
Mean number of days	16	14	16	16	17	14	14	13	12	12	14	15	173	50
SNOW														
Mean amount	6.2	6.5	3.7	0.4	T	0.0	0.0	0.0	0.0	0.0	0.7	3.2	20.7	49
Greatest amount	23.4	27.6	13.4	4.3	T	0.0	0.0	0.0	0.0	2.1	8.8	18.8	57.0	49
Least amount	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	49
Maximum amount (24 hours)	9.3	21.1	11.7	3.5	T	0.0	0.0	0.0	0.0	2.1	5.4	12.4	21.1	49
Mean number of days	9	7	5	1	Miss	0	0	0	0	Miss	2	6	30	50
WIND														
Percentage with gales	0.01	0.02	0.08	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.03	0.02	0.04	57
Mean wind speed (knots)	9.0	9.5	9.8	9.4	8.3	7.6	7.1	6.8	7.2	7.6	8.3	8.7	8.3	57
Direction (percentage of observations)														
North	6.9	7.5	7.7	6.7	5.6	5.3	5.9	6.6	7.9	7.3	6.1	6.1	6.6	57
North Northeast	3.9	4.0	4.5	3.7	3.5	3.0	2.8	3.9	5.1	4.8	3.7	3.6	3.9	57
Northeast	3.8	3.4	3.6	3.1	3.0	2.1	1.9	2.8	4.0	4.8	3.7	3.8	3.3	57
East Northeast	6.4	6.9	7.5	7.0	6.8	4.6	3.7	5.2	6.9	7.2	5.9	6.4	6.2	57
East	3.4	4.0	4.9	5.6	5.5	4.4	3.5	3.6	4.9	3.9	3.6	3.4	4.2	57
East Southeast	2.1	2.6	3.4	3.9	4.6	3.8	3.8	3.6	4.5	3.2	2.5	2.1	3.3	57
Southeast	1.8	2.1	2.9	3.2	3.9	4.4	3.8	3.4	3.8	2.5	2.4	1.9	3.0	57
South Southeast	2.0	2.5	3.3	3.4	4.4	4.8	5.0	4.6	4.0	3.3	3.0	2.1	3.5	57
South	2.9	3.5	4.4	5.4	5.8	7.0	7.0	6.4	5.3	4.6	4.3	3.5	5.0	57
South Southwest	3.7	3.6	4.5	5.8	6.5	6.9	7.6	7.3	5.9	5.1	4.8	3.7	5.5	57
Southwest	8.4	7.6	7.4	9.4	11.5	13.9	14.7	13.3	10.4	9.7	8.6	8.7	10.3	57
West Southwest	8.5	7.5	6.7	8.6	10.3	12.6	12.5	10.3	9.0	9.6	9.3	9.2	9.5	57
West	10.5	8.8	7.6	7.0	7.0	6.5	6.9	7.0	5.8	7.6	9.4	10.1	7.8	57
West Northwest	13.6	13.3	11.1	9.2	6.7	6.3	6.8	6.8	6.2	8.5	12.0	13.4	9.5	57
Northwest	11.2	11.7	10.0	8.8	6.6	6.5	5.8	5.8	6.2	7.0	9.1	10.7	8.3	57
North Northwest	8.1	8.3	8.6	7.2	5.8	5.4	5.2	5.7	6.7	6.4	7.3	7.6	6.9	57
Calm	3.1	2.7	1.8	1.8	2.5	2.5	3.1	3.7	3.5	4.5	4.3	3.6	3.1	57
Direction (mean speed, knots)														
North	9.0	9.5	9.4	9.5	8.4	7.9	7.0	7.1	7.5	7.8	7.9	8.8	8.3	57
North Northeast	9.7	10.0	9.9	9.7	9.3	8.3	7.6	7.8	8.2	8.7	9.0	9.1	9.0	57
Northeast	10.1	10.3	10.7	10.0	9.3	8.8	7.7	8.3	9.0	9.4	9.5	9.8	9.5	57
East Northeast	9.9	10.2	11.0	10.4	9.7	9.2	8.4	8.6	9.3	9.6	8.9	9.0	9.6	57
East	7.2	8.1	9.3	9.2	8.3	8.1	7.4	7.2	7.7	8.1	7.4	7.3	8.0	57
East Southeast	5.8	6.3	7.3	7.7	7.2	7.0	6.4	6.4	6.6	6.4	6.8	6.3	6.8	57
Southeast	5.7	6.2	7.1	6.8	6.6	6.4	6.0	5.9	6.2	6.2	6.7	5.7	6.3	57
South Southeast	6.7	6.3	7.7	7.6	7.6	6.5	6.3	6.2	6.2	6.6	6.9	6.6	6.8	57
South	7.7	7.8	8.6	8.5	7.8	7.4	7.1	6.8	7.1	6.8	8.0	7.3	7.5	57
South Southwest	8.2	8.5	9.4	9.5	8.6	7.7	7.7	7.3	7.6	7.4	8.4	8.2	8.1	57
Southwest	8.1	8.5	8.8	8.9	8.5	8.0	7.8	7.4	7.5	7.5	8.0	7.9	8.0	57
West Southwest	7.7	8.0	8.3	8.6	8.0	7.8	7.5	7.0	7.0	7.1	7.6	7.7	7.7	57
West	9.3	9.6	10.2	9.3	8.0	7.2	6.8	6.4	6.7	7.4	8.6	9.0	8.3	57
West Northwest	11.2	11.9	12.3	11.5	9.5	8.3	7.7	7.1	7.7	8.8	10.3	11.1	10.2	57
Northwest	10.9	11.8	11.9	11.5	9.5	8.7	7.5	7.0	7.5	8.8	10.2	10.8	10.0	57
North Northwest	10.0	10.6	10.9	10.6	9.2	8.2	7.5	7.0	7.6	8.6	9.9	10.0	9.4	57
VISIBILITY														
Mean number of days with fog	13	11	12	12	14	15	16	17	15	15	13	13	166	50

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – TRENTON, NJ (40°13'N, 74°46'W) 187 feet (57 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	31.1	32.5	42.2	52.3	62.3	71.4	76.1	75.0	67.5	56.4	46.8	36.3	54.3	19
Mean daily maximum	37.5	39.5	49.9	61.4	71.5	80.3	84.7	83.4	75.8	64.8	53.6	42.4	62.2	19
Mean daily minimum	24.2	25.0	34.0	42.6	52.6	62.0	67.0	66.2	58.7	47.5	39.5	29.7	45.9	19
Extreme (highest)	70	69	83	93	94	98	102	98	96	86	81	72	102	19
Extreme (lowest)	-4	-2	8	24	35	43	53	48	37	28	15	1	-4	19
PRECIPITATION (inches)														
Mean amount	3.1	2.8	3.5	3.0	3.5	3.4	4.6	3.7	4.1	2.8	3.2	3.7	41.9	19
Greatest amount	8.9	5.1	7.3	6.6	6.2	6.2	13.3	9.6	9.0	5.4	7.7	6.9	59.4	19
Least amount	0.3	0.5	0.9	0.8	0.2	0.6	1.3	0.4	0.7	0.0	0.3	0.5	30.4	19
Maximum amount (24 hours)	2.2	2.4	2.2	1.5	2.6	4.4	5.7	4.7	3.3	3.3	2.8	2.4	5.7	19
Mean number of days	5	4	9	11	0	9	8	12	13	4	11	13	99	2
SNOW														
Mean amount	7.6	7.9	3.7	0.5	T	0.0	0.0	0.0	0.0	0.2	0.6	4.3	24.7	19
Greatest amount	20.8	24.3	13.3	4.4	T	0.0	0.0	0.0	0.0	2.5	6.3	15.5	52.7	19
Least amount	0.2	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	19
Maximum amount (24 hours)	9.0	13.4	5.4	3.0	T	0.0	0.0	0.0	0.0	2.4	6.3	11.2	13.4	19
Mean number of days	3	3	2	0	0	0	0	0	0	0	2	10	20	2
VISIBILITY														
Mean number of days with fog	2	1	1	1	0	0	Miss	1	5	3	1	4	19	2

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – NORFOLK, VA (36°54'N, 76°12'W) 43 feet (13 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE (station pressure reduced to sea level)														
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	4	2	Miss	0	0	0	0	0	0	Miss	2	12	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	1.6	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	6.8	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

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – RICHMOND, VA (37°30'N, 77°20'W) 177 feet (54 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE (station pressure reduced to sea level)														
Mean (millibars)	1019.7	1019.1	1017.1	1015.9	1016.2	1015.6	1016.4	1017.1	1018.6	1019.4	1019.6	1020.3	1017.9	49
TEMPERATURE (°F)														
Mean	38.0	40.2	48.0	57.6	66.4	74.5	78.4	76.8	70.8	59.5	49.6	40.6	58.5	77
Mean daily maximum	47.2	50.2	58.0	69.4	77.6	85.1	88.3	86.5	80.9	70.6	60.2	50.0	68.8	77
Mean daily minimum	28.3	29.8	36.7	45.3	54.7	63.4	68.1	66.6	60.1	47.8	38.4	30.8	47.6	77
Extreme (highest)	80	82	91	96	98	104	105	103	103	99	86	80	105	77
Extreme (lowest)	-6	-8	11	19	31	40	51	39	35	21	14	1	-8	77
RELATIVE HUMIDITY														
Average percentage	72.4	65.8	45.9	34.0	37.4	31.1	39.5	45.6	61.1	69.3	70.6	78.3	54.2	50
CLOUD COVER														
Percent of time clear	26.9	27.3	27.2	24.5	21.1	19.0	16.8	19.0	25.3	34.0	29.7	29.8	25.0	48
Percent of time scattered	12.7	12.5	13.9	15.9	17.3	21.8	22.1	21.2	18.8	16.4	15.2	13.4	16.8	48
Percent of time broken	12.0	12.1	14.1	17.8	20.0	23.7	26.3	24.1	19.2	14.4	14.5	12.2	17.6	48
Percent of time overcast	44.7	43.9	40.5	36.6	35.3	28.8	28.3	29.4	31.2	30.7	36.3	40.3	35.5	48
PRECIPITATION (inches)														
Mean amount	3.3	2.9	3.6	3.1	3.6	3.6	5.1	4.7	3.3	3.1	2.9	3.1	42.7	77
Greatest amount	10.0	5.9	8.6	7.3	8.8	9.2	16.0	14.1	10.9	9.3	7.6	7.0	61.3	77
Least amount	0.6	0.3	0.9	0.5	0.4	0.3	0.5	0.6	0.2	0.3	0.2	0.4	26.8	77
Maximum amount (24 hours)	3.3	2.6	3.1	2.7	3.0	3.9	7.2	8.7	4.9	4.7	3.0	2.4	8.7	77
Mean number of days	18	16	18	17	18	16	18	17	14	13	15	16	196	77
SNOW														
Mean amount	4.5	3.9	2.1	0.1	0.0	0.0	0.0	0.0	0.0	T	0.4	2.1	13.0	76
Greatest amount	26.2	21.4	19.7	2.5	0.0	0.0	0.0	0.0	0.0	T	9.2	12.5	47.0	76
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	76
Maximum amount (24 hours)	13.3	13.3	10.6	2.3	0.0	0.0	0.0	0.0	0.0	T	7.2	7.5	13.3	76
Mean number of days	7	6	3	1	0	0	0	0	0	Miss	1	4	22	61
WIND														
Percentage with gales	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	50
Mean wind speed (knots)	7.1	7.5	7.9	7.8	6.8	6.4	6.0	5.5	5.8	6.0	6.5	6.7	6.7	50
Direction (percentage of observations)														
North	9.2	9.6	8.0	7.1	7.0	6.6	6.3	8.0	10.5	10.9	8.9	8.9	8.4	50
North Northeast	8.2	8.5	7.2	5.9	6.3	5.3	5.2	6.8	9.6	9.3	6.8	7.4	7.2	50
Northeast	6.1	6.1	6.3	5.0	6.2	5.1	4.4	6.2	7.3	6.6	5.2	5.6	5.8	50
East Northeast	2.8	3.2	3.8	3.5	4.2	3.9	3.4	4.4	4.4	3.8	2.6	2.9	3.6	50
East	1.9	2.6	3.3	3.3	4.0	3.8	3.7	3.7	3.9	2.9	2.3	1.9	3.1	50
East Southeast	2.1	2.6	3.5	3.8	4.2	4.5	3.9	4.1	3.8	3.2	2.5	1.9	3.4	50
Southeast	3.5	4.0	4.6	5.4	5.8	5.7	5.6	5.3	4.9	4.7	3.9	2.9	4.7	50
South Southeast	4.1	4.3	4.7	5.2	5.7	6.8	6.6	6.7	5.9	4.8	5.2	4.3	5.4	50
South	8.5	7.8	7.5	9.4	10.2	11.1	11.9	10.9	8.8	8.6	9.9	8.9	9.5	50
South Southwest	8.5	8.2	8.5	9.9	10.3	11.2	12.5	10.0	8.0	7.4	9.0	9.5	9.4	50
Southwest	9.0	8.0	7.6	8.3	8.4	9.6	10.7	8.2	6.1	5.9	8.2	8.9	8.3	50
West Southwest	7.0	6.8	6.1	6.3	5.4	6.1	6.1	4.3	3.6	4.1	6.0	6.6	5.7	50
West	6.2	5.1	5.8	5.2	3.9	3.8	3.6	2.7	2.7	3.3	4.7	5.7	4.4	50
West Northwest	5.5	5.6	5.2	5.0	3.5	3.3	2.6	2.3	2.2	3.4	4.6	5.4	4.1	50
Northwest	5.7	6.4	7.1	6.3	4.7	3.8	3.2	3.3	3.8	4.8	5.9	6.0	5.1	50
North Northwest	6.4	6.6	6.8	6.1	5.5	4.7	4.4	5.2	6.4	7.5	6.7	6.9	6.1	50
Calm	5.3	4.5	4.0	4.3	4.7	4.5	5.9	7.9	8.3	8.5	7.6	6.1	6.0	50
Direction (mean speed, knots)														
North	7.6	8.3	8.4	8.5	7.8	7.2	6.6	6.5	6.9	7.2	7.5	7.7	7.5	50
North Northeast	8.0	8.2	8.2	8.5	7.6	7.4	6.9	6.8	7.4	7.7	7.2	7.5	7.6	50
Northeast	6.8	6.8	7.4	7.3	7.0	6.9	6.3	6.2	6.6	6.7	6.3	6.3	6.7	50
East Northeast	5.9	6.8	7.0	6.9	6.4	6.5	6.0	6.0	6.2	6.2	6.2	5.5	6.3	50
East	5.2	5.8	6.4	6.7	6.4	6.2	5.7	5.6	5.8	5.7	5.5	5.2	5.9	50
East Southeast	4.8	6.0	6.3	6.8	6.4	6.0	5.7	5.3	5.7	5.3	5.9	5.2	5.9	50
Southeast	5.3	5.8	6.8	6.7	6.1	5.5	5.6	5.1	5.3	5.0	5.6	5.1	5.7	50
South Southeast	6.0	6.5	7.2	7.4	6.4	6.2	5.8	5.5	5.7	5.6	6.3	5.8	6.2	50
South	6.8	7.0	7.9	8.1	7.0	6.4	6.3	5.7	5.9	6.0	6.8	6.6	6.7	50
South Southwest	7.6	8.1	9.0	8.7	7.9	7.2	6.7	6.3	6.4	6.7	7.3	7.5	7.4	50
Southwest	7.9	8.4	9.0	8.7	7.8	7.3	6.8	6.5	6.6	6.9	7.4	7.4	7.6	50
West Southwest	8.7	8.7	9.0	8.8	7.7	7.4	6.9	6.3	6.6	7.0	7.8	7.8	7.8	50
West	8.3	8.5	8.9	8.3	7.0	6.1	5.9	5.7	5.9	6.6	7.5	7.5	7.5	50
West Northwest	8.7	9.4	9.2	9.1	7.3	6.4	6.3	5.9	6.5	6.8	7.6	8.5	8.0	50
Northwest	8.1	8.8	9.2	8.8	7.4	6.6	6.3	5.5	6.2	7.0	7.6	7.9	7.7	50
North Northwest	8.1	8.4	8.7	8.5	7.4	7.0	6.3	6.1	6.4	6.9	7.7	8.0	7.5	50
VISIBILITY														
Mean number of days with fog	11	10	10	9	13	12	14	17	15	14	11	10	146	61

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – WASHINGTON (NATIONAL AIRPORT), DC (38°51'N, 77°02'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 (station pressure reduced to sea level)														
Mean (millibars)	1019.8	1018.6	1016.8	1016.0	1016.1	1015.5	1016.2	1016.9	1018.7	1019.5	1019.0	1019.9	1017.7	56
TEMPERATURE (°F)														
Mean	35.9	38.3	46.3	56.7	66.1	74.9	79.4	77.7	71.0	59.8	49.1	39.4	58.0	53
Mean daily maximum	43.3	46.4	55.3	66.7	75.7	84.1	88.0	86.1	79.5	69.0	57.4	46.6	66.7	53
Mean daily minimum	28.1	29.7	36.9	46.3	56.1	65.3	70.3	68.7	61.9	50.2	40.2	31.7	48.9	53
Extreme (highest)	79	82	89	95	99	101	104	105	101	94	86	75	105	53
Extreme (lowest)	-5	4	14	24	34	47	54	49	39	29	16	3	-5	53
RELATIVE HUMIDITY														
Average percentage	73.0	61.2	43.3	35.2	35.5	29.7	36.5	43.5	62.3	69.9	64.5	73.7	52.4	56
CLOUD COVER														
Percent of time clear	22.9	23.5	23.2	21.1	18.6	18.0	16.4	19.7	25.1	31.9	25.6	23.8	22.4	52
Percent of time scattered	14.0	15.1	15.9	16.4	18.5	22.5	23.4	22.8	20.6	17.4	15.9	14.2	18.1	52
Percent of time broken	12.5	12.7	14.1	16.9	18.1	22.3	24.1	21.6	17.2	14.2	14.6	13.0	16.8	52
Percent of time overcast	46.5	45.1	42.6	40.9	39.7	31.6	30.2	30.3	32.3	32.4	39.4	45.0	38.0	52
PRECIPITATION (inches)														
Mean amount	2.8	2.5	3.4	2.8	3.8	3.2	3.9	4.0	3.3	3.0	3.0	3.1	39.3	53
Greatest amount	7.1	5.7	8.4	6.8	10.6	11.5	12.9	14.3	12.3	8.6	6.7	6.5	57.5	53
Least amount	0.3	0.4	0.7	0.0	0.7	0.9	0.9	0.5	0.2	T	0.2	0.2	26.9	53
Maximum amount (24 hours)	1.8	1.9	2.2	3.0	3.2	6.1	4.6	5.4	4.7	3.3	2.5	2.8	6.1	53
Mean number of days	15	13	16	16	17	14	14	14	12	11	13	14	169	53
SNOW														
Mean amount	5.6	5.5	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.9	17.1	52
Greatest amount	23.8	30.6	17.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	11.5	16.2	44.6	52
Least amount	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	52
Maximum amount (24 hours)	13.8	16.4	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	11.5	11.1	16.4	52
Mean number of days	7	6	4	1	0	0	0	0	0	0	2	5	25	52
WIND														
Percentage with gales	0.01	0.01	0.04	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	56
Mean wind speed (knots)	8.8	9.2	9.6	9.3	8.3	7.8	7.3	7.1	7.3	7.7	8.2	8.4	8.2	56
Direction (percentage of observations)														
North	5.5	5.5	5.6	4.7	4.4	3.9	4.4	5.4	6.6	6.5	5.1	5.4	5.2	56
North Northeast	5.0	5.0	5.0	4.3	4.3	3.9	4.0	5.1	6.5	6.3	4.5	4.6	4.9	56
Northeast	5.7	6.1	6.1	6.1	6.0	4.6	4.1	5.2	6.9	6.9	5.7	5.8	5.8	56
East Northeast	3.3	4.3	4.5	4.3	4.6	3.7	3.1	3.9	4.4	3.9	2.8	3.0	3.8	56
East	1.7	2.2	3.0	3.4	3.7	2.9	2.7	3.0	2.8	2.3	1.7	1.7	2.6	56
East Southeast	1.5	1.9	2.5	2.9	3.1	2.3	2.5	2.5	2.6	1.9	1.6	1.5	2.2	56
Southeast	2.0	2.5	3.1	3.8	4.3	3.7	3.8	3.5	3.6	2.7	2.3	2.0	3.1	56
South Southeast	4.3	4.5	5.5	6.4	8.2	9.1	8.5	8.3	6.5	5.5	4.4	4.0	6.3	56
South	11.9	11.7	10.9	13.0	16.1	17.7	15.5	15.0	13.2	12.9	13.3	11.8	13.6	56
South Southwest	10.0	8.4	8.4	9.7	10.5	12.7	13.4	11.8	10.4	10.0	10.7	11.0	10.6	56
Southwest	4.7	3.9	3.9	4.5	5.0	6.7	8.3	6.9	6.0	6.0	5.8	5.1	5.6	56
West Southwest	3.0	2.4	2.9	2.9	3.1	3.8	4.8	3.6	3.4	3.9	3.9	3.2	3.4	56
West	3.6	3.8	3.8	3.9	3.1	3.3	3.6	3.3	2.6	3.2	3.8	4.0	3.5	56
West Northwest	8.9	9.5	8.0	7.3	5.1	4.3	4.2	3.5	3.6	5.0	7.8	8.3	6.3	56
Northwest	14.4	14.5	13.9	11.1	8.1	7.3	7.0	7.2	7.5	9.3	12.5	13.8	10.5	56
North Northwest	11.7	10.6	10.4	9.3	7.7	7.3	6.9	8.2	9.6	9.8	9.9	10.5	9.3	56
Calm	3.2	3.1	2.6	2.3	2.6	2.8	3.3	3.7	3.8	4.1	4.3	4.3	3.3	56
Direction (mean speed, knots)														
North	8.9	9.4	9.9	9.3	8.8	8.2	7.6	7.6	8.3	8.4	8.3	8.7	8.6	56
North Northeast	9.1	9.0	9.4	9.2	9.0	8.7	8.3	8.4	8.9	9.3	8.2	8.4	8.8	56
Northeast	8.0	7.9	8.7	8.7	8.5	8.4	7.7	7.5	8.2	8.3	7.6	7.4	8.1	56
East Northeast	7.1	7.5	8.4	8.8	8.1	7.8	7.3	7.1	7.6	7.7	7.1	6.9	7.7	56
East	5.9	6.5	7.1	7.5	7.0	7.2	6.7	6.4	6.9	6.3	6.1	6.5	6.8	56
East Southeast	5.5	6.3	7.0	7.6	7.2	6.8	6.7	6.8	6.8	6.3	6.5	5.6	6.7	56
Southeast	5.7	6.4	7.4	7.2	7.5	6.8	7.1	6.5	6.5	6.0	6.7	5.6	6.7	56
South Southeast	6.2	6.6	7.8	7.9	7.9	7.7	7.7	7.1	7.0	6.7	6.7	6.4	7.3	56
South	7.4	7.8	8.8	8.7	8.3	8.0	8.1	7.8	7.8	7.7	8.0	7.3	8.0	56
South Southwest	8.5	8.9	9.9	9.6	8.5	8.1	7.8	7.4	7.6	7.6	8.2	8.1	8.3	56
Southwest	7.3	7.8	7.9	7.9	7.1	6.7	6.5	6.1	5.8	5.7	6.4	6.5	6.7	56
West Southwest	7.0	7.8	8.3	8.1	7.1	6.8	6.3	6.0	5.5	6.0	6.5	7.0	6.8	56
West	9.8	10.6	10.4	9.3	8.2	7.9	6.7	6.7	6.4	7.4	8.8	9.6	8.6	56
West Northwest	12.3	13.2	12.6	11.9	10.2	9.0	8.2	7.8	8.2	10.1	11.4	11.5	11.1	56
Northwest	11.8	12.2	12.4	12.1	10.4	9.5	8.5	7.9	8.5	10.3	11.0	11.7	10.9	56
North Northwest	10.5	10.8	11.0	11.0	9.6	9.1	8.0	7.9	8.3	9.1	9.9	10.3	9.7	56
VISIBILITY														
Mean number of days with fog	11	10	10	9	12	10	10	12	12	13	11	11	131	53

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL DATA – BALTIMORE, MD (39°11'N, 76°40'W) 148 feet (45 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE (station pressure reduced to sea level)														
Mean (millibars)	1019.3	1018.4	1016.9	1015.6	1016.1	1015.6	1016.1	1017.0	1018.5	1019.2	1019.0	1019.7	1017.6	48
TEMPERATURE (°F)														
Mean	33.0	35.7	43.7	54.2	63.6	72.7	77.5	75.7	68.8	57.2	46.5	37.0	55.6	47
Mean daily maximum	41.1	44.4	53.3	64.9	74.2	83.2	87.5	85.4	78.6	67.6	56.0	45.2	65.3	47
Mean daily minimum	24.3	26.5	33.6	43.0	52.5	61.8	67.0	65.5	58.4	46.2	36.6	28.3	45.4	47
Extreme (highest)	75	79	87	94	98	101	104	105	100	92	86	77	105	47
Extreme (lowest)	-7	-3	6	20	32	40	50	45	35	25	13	0	-7	47
RELATIVE HUMIDITY														
Average percentage	68.3	53.2	44.4	31.2	36.1	30.9	35.8	44.9	60.4	66.8	64.8	72.5	51.2	49
CLOUD COVER														
Percent of time clear	24.9	25.5	26.3	23.0	21.1	21.6	19.7	21.8	27.3	34.0	27.3	26.2	24.9	47
Percent of time scattered	14.2	14.6	15.2	16.8	17.5	23.8	25.0	22.9	19.4	17.1	15.8	14.6	18.1	47
Percent of time broken	12.7	13.0	14.0	16.7	18.3	21.5	22.5	21.4	17.5	14.7	14.8	13.2	16.7	47
Percent of time overcast	44.7	43.1	40.8	39.0	38.0	28.1	27.6	28.4	31.1	30.2	38.2	42.3	35.9	47
PRECIPITATION (inches)														
Mean amount	3.0	2.9	3.8	3.1	3.6	3.5	3.8	4.0	3.5	3.0	3.2	3.4	41.2	47
Greatest amount	7.8	7.1	8.6	8.1	8.7	9.9	8.1	18.3	8.6	8.0	7.6	7.4	58.9	47
Least amount	0.2	0.4	0.9	0.3	0.3	0.1	0.3	0.7	0.2	T	0.3	0.2	27.8	47
Maximum amount (24 hours)	2.5	3.2	2.4	2.2	3.2	3.8	5.8	4.9	5.0	2.7	3.3	3.3	5.8	47
Mean number of days	15	13	15	15	16	14	14	13	11	11	13	15	165	47
SNOW														
Mean amount	6.3	6.7	3.8	0.1	T	0.0	0.0	0.0	0.0	0.0	0.9	3.3	21.0	47
Greatest amount	32.6	33.1	21.6	0.7	T	0.0	0.0	0.0	0.0	0.3	8.4	20.4	59.7	47
Least amount	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	47
Maximum amount (24 hours)	15.8	22.8	11.3	0.7	T	0.0	0.0	0.0	0.0	0.3	8.4	9.3	22.8	47
Mean number of days	8	7	5	1	Miss	0	0	0	0	Miss	2	5	28	47
WIND														
Percentage with gales	0.01	0.02	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.02	0.01	0.06	49
Mean wind speed (knots)	8.4	8.9	9.3	9.0	7.8	7.2	6.8	6.6	6.9	7.3	8.0	8.0	7.8	49
Direction (percentage of observations)														
North	4.0	4.7	4.5	4.0	3.7	3.8	3.7	4.5	5.6	5.2	3.7	3.9	4.3	49
North Northeast	3.0	3.5	3.4	3.0	3.5	2.8	2.7	3.7	4.5	4.2	2.8	3.2	3.3	49
Northeast	5.2	5.0	5.4	4.4	5.4	3.8	3.5	4.4	5.8	5.5	4.5	5.1	4.8	49
East Northeast	4.8	6.1	6.3	6.2	5.5	3.7	3.6	3.4	4.7	5.1	4.3	4.5	4.8	49
East	3.4	5.1	5.5	5.8	6.1	4.7	3.8	4.1	5.0	4.2	4.2	3.8	4.6	49
East Southeast	2.3	2.8	3.4	3.6	3.9	3.0	3.0	3.0	3.5	2.8	2.3	2.2	3.0	49
Southeast	3.1	3.3	4.4	5.0	5.3	4.8	4.2	4.3	3.9	3.8	3.4	2.5	4.0	49
South Southeast	2.7	3.3	4.1	5.6	5.9	6.7	5.9	6.0	4.7	3.9	3.3	2.7	4.6	49
South	4.0	3.7	4.0	4.9	6.3	8.6	8.0	8.2	7.2	4.9	5.1	4.1	5.7	49
South Southwest	4.2	4.3	3.7	4.8	6.0	7.0	6.9	6.7	6.2	4.9	5.0	5.3	5.4	49
Southwest	6.2	5.5	5.1	6.3	6.7	7.6	8.4	7.1	6.2	6.7	6.8	6.9	6.6	49
West Southwest	6.4	5.4	4.6	5.3	6.5	8.3	9.1	7.3	6.1	6.5	6.9	6.7	6.6	49
West	12.1	10.0	9.8	10.5	10.3	11.0	12.4	12.1	11.0	12.2	12.8	12.1	11.4	49
West Northwest	16.8	15.6	15.1	12.4	9.5	8.8	9.2	8.5	8.4	11.7	15.0	15.3	12.2	49
Northwest	11.0	11.3	11.0	9.4	6.9	6.5	6.4	6.3	6.8	7.2	9.4	10.2	8.5	49
North Northwest	5.4	5.9	6.0	5.1	4.1	4.0	3.8	3.9	5.0	5.0	4.9	5.0	4.8	49
Calm	5.4	4.5	3.8	3.8	4.4	5.0	5.4	6.5	5.4	6.2	5.6	6.5	5.2	49
Direction (mean speed, knots)														
North	7.8	8.2	9.0	8.7	7.9	7.8	6.9	7.3	7.9	8.0	8.0	7.9	8.0	49
North Northeast	7.2	7.6	8.5	8.1	7.7	7.7	6.6	7.3	7.5	7.6	7.5	7.1	7.5	49
Northeast	7.8	7.3	7.9	8.3	7.9	7.6	7.1	7.6	7.5	7.9	7.1	7.0	7.6	49
East Northeast	7.3	7.6	8.8	8.6	8.2	7.7	7.1	7.6	7.9	8.5	7.4	7.3	7.9	49
East	6.0	6.8	7.8	8.3	7.5	7.5	7.0	7.3	7.1	6.9	7.0	6.4	7.2	49
East Southeast	5.6	6.1	7.0	7.7	7.0	7.1	6.7	6.8	6.7	6.5	6.3	5.7	6.7	49
Southeast	6.4	7.2	7.8	8.0	7.6	7.3	6.8	6.8	6.7	6.8	7.1	6.2	7.1	49
South Southeast	6.6	7.5	8.6	8.5	7.8	7.4	7.2	7.1	7.3	7.2	7.5	6.4	7.5	49
South	6.9	7.4	7.9	8.3	7.5	7.2	7.0	6.9	7.2	6.9	7.6	6.6	7.3	49
South Southwest	7.8	8.4	9.6	9.5	7.9	7.3	7.5	7.0	7.4	7.5	8.3	8.0	7.9	49
Southwest	7.7	8.8	9.4	9.5	8.1	7.3	7.3	6.8	7.2	7.4	8.0	7.7	7.9	49
West Southwest	7.8	7.9	8.6	8.3	7.5	7.3	6.9	6.5	6.4	6.9	7.3	7.4	7.3	49
West	9.3	9.7	9.7	9.3	7.9	7.1	6.7	6.5	6.3	7.1	8.3	8.8	8.0	49
West Northwest	11.5	12.1	12.1	11.4	9.2	8.2	7.5	7.0	7.4	8.4	10.2	11.0	10.1	49
Northwest	11.2	12.1	12.2	11.6	10.0	9.3	8.1	8.1	8.6	9.8	10.7	11.1	10.5	49
North Northwest	9.7	10.5	10.4	10.2	9.2	8.5	7.8	7.7	8.3	8.8	9.5	9.6	9.3	49
VISIBILITY														
Mean number of days with fog	11	10	12	10	14	14	14	15	14	13	12	11	150	47

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

METEOROLOGICAL TABLES

COASTAL AREA OFF ATLANTIC CITY, NJ
Between 38°N to 40°N and 70°W to 76°W

WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots [1]	6.9	6.6	5.9	2.4	0.7	0.3	0.2	0.5	1.1	2.6	4.7	6.5	3.1
Wave Height > 9 feet [1]	14.2	14.6	11.4	7.0	2.7	1.3	0.9	2.6	3.6	7.3	9.8	12.7	7.3
Visibility < 2 nautical miles [1]	4.0	5.7	5.7	7.3	10.9	9.1	5.1	2.7	2.2	2.3	2.1	2.8	5.0
Precipitation [1]	12.1	11.8	8.6	6.4	5.7	4.3	4.0	4.4	5.1	5.7	7.6	9.9	7.0
Temperature > 69° F	0.1	0.2	0.3	0.6	3.1	29.2	84.0	87.8	54.8	12.8	1.7	0.3	24.0
Mean Temperature (°F)	42.8	41.9	45.6	50.3	57.7	67.3	74.3	75.3	70.8	62.7	55.0	47.1	58.0
Temperature < 33° F [1]	14.0	14.8	3.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	4.9	3.0
Mean RH (%)	78	78	78	80	84	85	84	82	79	77	77	76	80
Overcast or Obscured [1]	43.7	41.0	36.7	32.4	31.8	28.4	24.4	21.3	23.2	25.0	31.2	38.9	31.2
Mean Cloud Cover (8^{ths})	5.6	5.4	4.9	4.4	4.5	4.4	4.4	4.3	4.2	4.4	4.9	5.4	4.7
Mean SLP (mbs)	1017	1017	1016	1016	1016	1016	1016	1017	1018	1018	1018	1018	1017
Ext. Max. SLP (mbs)	1047	1047	1039	1040	1039	1036	1034	1035	1037	1043	1043	1046	1047
Ext. Min. SLP (mbs)	982	978	978	984	988	991	996	995	994	989	986	986	978
Prevailing Wind Direction	NW	NW	NW	SW	SW	SW	SW	SW	NE	N	NW	NW	SW
Thunder and Lightning [1]	0.5	0.4	0.7	0.5	0.9	1.2	1.9	2.0	1.4	0.8	0.7	0.6	1.0

COASTAL AREA OFF CHESAPEAKE BAY
Between 36°N to 40°N and 76° to 77°W

WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots [1]	0.4	1.0	1.0	0.2	0.2	0.0	0.1	0.3	1.2	1.3	1.3	0.8	0.6
Wave Height > 9 feet [1]	0.8	0.4	0.8	1.0	0.5	0.4	0.3	0.2	0.5	0.4	0.8	0.7	0.5
Visibility < 2 nautical miles [1]	9.1	8.1	5.9	6.9	5.7	3.0	2.1	2.8	4.0	4.4	9.6	11.0	5.9
Precipitation [1]	9.3	10.9	9.0	7.0	6.2	4.2	5.8	6.6	8.4	6.1	7.6	10.7	7.6
Temperature > 69° F	0.0	0.2	1.9	6.8	30.2	77.4	96.5	93.1	72.4	18.2	3.9	0.4	35.6
Mean Temperature (°F)	41.8	42.9	49.2	57.1	66.9	75.5	79.1	77.9	74.1	64.4	53.9	44.0	61.6
Temperature < 33° F [1]	17.3	12.7	2.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	9.1	3.2
Mean RH (%)	74	72	72	70	75	75	77	77	76	75	73	73	74
Overcast or Obscured [1]	33.5	35.2	28.8	26.0	23.4	19.8	20.3	20.9	24.1	22.6	26.3	32.8	25.9
Mean Cloud Cover (8^{ths})	4.5	4.6	4.2	4.1	4.2	4.3	4.6	4.6	4.4	3.7	4.2	4.6	4.3
Mean SLP (mbs)	1020	1018	1018	1017	1016	1016	1016	1017	1017	1018	1019	1019	1017
Ext. Max. SLP (mbs)	1046	1046	1039	1040	1037	1032	1031	1032	1033	1039	1041	1041	1046
Ext. Min. SLP (mbs)	988	985	987	991	991	994	998	997	994	992	990	987	985
Prevailing Wind Direction	N	N	N	N	SW	SW	SW	SW	NE	N	N	N	SW
Thunder and Lightning [1]	0.0	0.1	0.2	0.4	0.6	0.6	1.0	0.9	0.2	0.2	0.2	0.0	0.4

COASTAL AREA OFF NORFOLK, VA
Between 36°N to 38°N and 72°W to 76°W

WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots [1]	4.9	5.5	4.7	2.3	0.5	0.4	0.2	0.3	1.1	2.1	3.6	5.0	2.5
Wave Height > 9 feet [1]	9.2	9.6	8.0	4.7	2.1	1.5	0.9	1.3	2.8	5.5	6.5	9.8	4.9
Visibility < 2 nautical miles [1]	3.1	4.4	4.8	4.7	5.2	3.6	1.6	1.3	1.3	1.7	1.7	1.9	2.9
Precipitation [1]	9.3	8.3	6.9	5.5	4.9	4.3	4.2	4.1	4.7	5.6	6.3	7.7	5.9
Temperature > 69° F	1.0	0.9	1.3	4.3	16.1	61.5	96.3	96.9	76.8	25.9	6.6	1.7	33.7
Mean Temperature (°F)	47.6	47.6	50.4	56.2	63.3	71.9	77.6	77.9	73.9	66.1	58.6	51.6	62.3
Temperature < 33° F [1]	6.2	5.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.8	1.2
Mean RH (%)	76	76	76	78	81	82	82	81	79	76	74	75	78
Overcast or Obscured [1]	38.3	36.7	33.9	27.9	26.0	22.7	21.0	19.8	20.7	22.7	26.3	34.2	27.3
Mean Cloud Cover (8^{ths})	5.2	5.1	4.8	4.3	4.4	4.4	4.4	4.4	4.2	4.2	4.5	5.1	4.6
Mean SLP (mbs)	1019	1017	1017	1016	1016	1016	1017	1017	1018	1018	1018	1019	1017
Ext. Max. SLP (mbs)	1047	1047	1039	1040	1038	1036	1035	1037	1036	1044	1044	1045	1047
Ext. Min. SLP (mbs)	982	978	978	987	990	991	996	995	993	990	986	986	978
Prevailing Wind Direction	N	NW	N	SW	S	SW	SW	SW	NE	N	N	NW	N
Thunder and Lightning [1]	0.6	0.7	0.9	1.0	1.7	1.8	2.7	2.7	1.4	1.0	0.7	0.6	1.3

[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	Inches	Millibars	Inches	Millibars
28.44	963	29.32	993	30.21	1023
28.53	966	29.41	996	30.30	1026
28.62	969	29.50	999	30.39	1029
28.70	972	29.59	1002	30.48	1032
28.79	975	29.68	1005	30.56	1035
28.88	978	29.77	1008	30.65	1038
28.97	981	29.86	1011	30.74	1041
29.06	984	29.94	1014	30.83	1044
28.15	987	30.03	1017	30.92	1047
28.24	990	30.12	1020	31.01	1050

Mean Surface Water Temperatures and Densities

		Sandy Hook, NJ 40°28'N., 74°01'W.	Atlantic City, NJ 39°21'N., 74°25'W.	Breakwater Harbor, DE 38°47'N., 75°06'W.	Philadelphia, PA 39°57'N., 75°08'W.	Kiptopeke Beach, VA 37°10'N., 75°59'W.	Cape Charles (town), VA 37°16'N., 76°01'W.	Virginia Beach, VA 36°50'N., 75°58'W.	Old Point Comfort, VA 37°00'N., 76°18'W.	Little Creek, VA 36°55'N., 76°11'W.	Richmond, VA 37°32'N., 77°25'W.	Gloucester Point, VA 37°15'N., 76°30'W.	Washington, DC 38°52'N., 77°01'W.	Crisfield, MD 37°58'N., 75°52'W.	Solomons, MD 38°19'N., 76°27'W.	Cambridge, MD 38°34'N., 76°04'W.	Annapolis, MD 38°59'N., 76°29'W.	Baltimore, MD 39°16'N., 76°35'W.
Years of Record		32	56	25	39	19	5	9	9	6	21	18	26	2	32	8	23	56
Jan	Temp (°C)	1.6	2.9	2.8	2.3	3.9	5.5	5.3	5.8	4.2	4.7	4.3	2.8	2.6	3.3	4.1	2.9	3.0
	Density	17.0	23.1	20.9	-0.6	19.7	16.0	20.4	14.0	15.8	-0.7	14.7	-0.9	11.9	10.7	6.6	7.9	6.8
Feb	Temp (°C)	1.4	2.3	2.6	2.5	3.9	5.4	4.4	5.8	5.1	5.6	4.6	3.5	4.4	3.1	4.1	2.8	2.8
	Density	16.9	23.2	21.0	-0.6	19.4	15.6	19.8	13.2	15.2	-0.7	13.9	-0.9	17.3	10.3	6.1	7.5	6.7
Mar	Temp (°C)	4.1	4.4	5.3	5.4	6.8	7.5	6.3	9.1	8.3	8.9	7.7	7.7	7.5	6.0	7.1	6.1	5.9
	Density	15.9	23.1	20.6	-0.5	18.6	15.2	19.6	12.0	14.3	-0.7	13.0	-0.8	11.1	9.3	6.1	6.5	5.5
Apr	Temp (°C)	9.1	8.5	9.9	10.8	11.8	12.8	10.7	14.0	12.9	14.8	13.1	14.1	15.0	11.5	13.0	12.0	11.7
	Density	15.0	23.0	20.4	-0.4	18.0	14.8	19.2	12.3	14.3	-0.6	12.6	-0.8	10.9	7.8	5.6	4.8	3.8
May	Temp (°C)	14.6	13.2	15.1	17.5	17.4	18.1	15.7	19.5	18.7	20.7	19.2	20.2	21.9	18.2	19.1	18.3	17.9
	Density	16.2	23.2	20.9	-0.2	18.2	14.6	19.0	12.8	15.0	-0.5	12.6	-0.7	11.6	7.5	5.2	4.6	3.6
Jun	Temp (°C)	20.1	17.9	20.1	23.3	22.4	23.8	20.6	23.9	23.4	25.2	23.8	25.3	26.0	23.6	24.1	23.6	23.4
	Density	17.7	23.5	21.3	-0.2	19.0	15.7	18.8	13.7	16.2	-0.4	13.3	-0.6	11.6	7.8	5.3	5.2	3.8
Jul	Temp (°C)	23.5	20.7	22.9	26.3	25.2	26.6	23.0	26.7	26.1	28.1	26.5	28.3	27.9	26.7	27.1	26.9	26.4
	Density	19.0	23.6	22.1	-0.2	19.4	16.9	19.8	15.1	17.7	-0.4	14.7	-0.5	11.7	8.8	5.6	6.2	4.5
Aug	Temp (°C)	23.5	21.9	23.1	26.1	25.2	26.2	23.7	26.2	26.6	27.4	26.6	27.6	28.4	26.7	26.4	26.6	26.4
	Density	19.1	23.5	22.1	-0.2	20.3	17.4	20.3	15.7	17.6	-0.5	15.4	-0.6	11.6	9.5	5.7	7.0	5.3
Sep	Temp (°C)	20.8	20.9	21.7	23.3	23.1	24.0	22.4	23.9	24.1	24.3	24.2	24.6	24.7	24.2	23.3	23.8	23.9
	Density	19.2	23.4	22.0	-0.2	20.5	17.8	20.1	15.8	17.6	-0.5	15.6	-0.6	12.2	10.5	7.0	8.1	6.5
Oct	Temp (°C)	15.0	16.3	16.8	17.5	17.9	18.8	18.6	18.8	18.8	18.0	18.8	18.3	18.4	18.6	17.4	18.3	18.6
	Density	19.1	23.4	22.1	-0.4	20.4	17.7	20.2	15.8	17.6	-0.6	15.6	-0.7	12.8	11.4	8.0	9.3	7.5
Nov	Temp (°C)	9.3	10.9	11.1	10.8	11.9	12.5	13.7	12.7	12.9	11.3	12.7	11.4	10.7	12.4	11.4	11.6	12.2
	Density	18.4	23.4	21.9	-0.4	20.0	17.6	20.6	15.9	17.0	-0.7	15.6	-0.8	12.4	12.0	8.4	9.8	7.7
Dec	Temp (°C)	3.8	5.3	5.3	4.8	6.6	6.7	8.3	7.3	7.3	5.5	7.7	4.8	4.0	6.3	4.9	5.4	6.1
	Density	17.5	23.2	21.4	-0.6	19.7	16.8	20.6	14.9	16.4	-0.6	15.2	-0.8	12.0	11.4	7.6	8.6	7.3
Mean	Temp (°C)	12.2	12.1	13.1	14.2	14.7	15.7	14.4	16.1	15.7	16.2	15.7	15.7	16.0	15.0	15.2	14.9	14.9
	Density	17.6	23.3	21.4	-0.4	19.4	16.3	19.9	14.3	16.2	-0.6	14.4	-0.7	12.3	9.8	5.9	7.1	5.8

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 – New York, NY to Chesapeake Bay entrance, VA
(nautical miles)

	Chesapeake Bay Entrance	Chincoteague, VA	Ocean City, MD	Indian River Inlet, DE	Trenton, NJ	Former U.S. Steel Basin, PA	Philadelphia, PA	Chester, PA	Marcus Hook, PA	Wilmington, DE	C & D Canal, East Entrance	Harbor of Refuge, DE	Delaware Bay Entrance	Cape May Harbor, NJ	Atlantic City, NJ	Barnegat Inlet, NJ	Manasquan Inlet, NJ	New York, NY	Montauk Point, NY	Nantucket Shoals
Nantucket Shoals 40°30.0'N., 69°25.0'W.	381	328	295	285	400	395	372	356	353	347	336	285	285	271	242	221	212	223	113	-
Montauk Point, NY 41°01.7'N., 71°47.3'W.	322	262	227	209	327	322	299	283	280	274	263	212	212	192	157	131	117	122	-	
New York, NY 40°42.0'N., 74°01.0'W.	267	201	161	145	268	263	240	224	221	215	204	153	153	128	94	63	40	-		
Manasquan Inlet, NJ 40°06.9'N., 72°30.3'W.	291	161	121	105	212	207	184	169	165	159	148	98	97	85	52	22	-			
Barnegat Inlet, NJ 39°46.0'N., 74°06.3'W.	199	141	101	86	193	188	165	150	146	140	129	79	78	65	32	-				
Atlantic City, NJ 39°22.6'N., 74°24.9'W.	171	113	73	57	164	159	136	121	117	111	100	50	49	37	-					
Cape May Harbor, NJ 38°57.1'N., 74°52.6'W.	141	80	40	24	131	126	103	88	84	78	67	17	16	-						
Delaware Bay Entrance 38°50.5'N., 75°03.3'W.	155	72	32	15	115	110	87	72	68	62	51	2	-							
Harbor of Refuge, DE 38°49.0'N., 75°05.2'W.	155	71	31	14	116	111	88	73	69	63	52	-								
C & D Canal, East Entrance 39°33.8'N., 75°32.8'W.	206	123	83	66	64	59	36	21	17	11	-									
Wilmington, DE 39°43.2'N., 75°31.5'W.	218	134	95	77	54	49	26	11	8	-										
Marcus Hook, PA 39°48.2'N., 75°25.2'W.	224	140	101	83	46	41	18	3	-											
Chester, PA 39°50.0'N., 75°22.0'W.	227	144	104	86	43	38	15	-												
Philadelphia, PA 39°56.8'N., 75°08.3'W.	242	159	119	101	28	23	-													
Former U.S. Steel Basin, PA 40°08.2'N., 74°45.3'W.	265	182	142	124	5	-														
Trenton, NJ 40°37.6'N., 73°34.9'W.	270	187	147	129	-															
Indian River Inlet, DE 38°36.5'N., 75°03.6'W.	118	60	20	-																
Ocean City, MD 38°19.6'N., 75°05.6'W.	100	41	-																	
Chincoteague, VA 37°56.1'N., 75°22.8'W.	69	-																		
Chesapeake Bay Entrance 36°56.3'N., 75°58.6'W.	-																			

Five Fathom Bank Lighted Buoy F (38°46.8'N., 74°34.5'W.) to Philadelphia, 111 miles
Delaware Lighted Buoy D (38°27.3'N., 74°41.8'W.) to Philadelphia, 116 miles
Chesapeake Light (36°54.3'N., 75°42.8'W.) to Norfolk, 42 miles; to Baltimore, 165 miles

Distances by Intracoastal Waterway – Manasquan Inlet, NJ to Cape May Canal, NJ
(nautical miles)

	C & D Canal (east entrance)	Cape May Canal (west entrance)	Cape May Harbor	Wildwood	Stone Harbor	Avalon	Sea Isle City	Ocean City	Mays Landing	Atlantic City	Beach Haven	Barnegat Inlet	Forked River (town)	Seaside Park	Toms River (town)	Mantoloking	Bay Head	Manasquan Inlet	Shark River Inlet*	New York, NY (The Battery)
New York, NY (The Battery) 40°42.0'N., 74°01.0'W.	190	142	138	133	128	123	119	108	124	97	79	66	63	54	58	46	44	40	34	-
Shark River Inlet* 40°11.2'N., 74°00.5'W.	156	108	103	99	94	89	85	74	90	62	45	32	29	20	23	11	9	6	-	
Manasquan Inlet 40°06.1'N., 74°01.9'W.	150	102	98	93	88	83	79	68	84	57	39	26	23	14	18	6	4	-		
Bay Head 40°03.8'N., 74°03.1'W.	146	98	94	89	85	79	76	64	80	53	35	22	19	10	14	2	-			
Mantoloking 40°02.2'N., 74°03.4'W.	144	96	92	88	83	77	74	63	79	51	33	20	17	9	12	-				
Toms River (town) 39°56.9'N., 74°11.8'W.	142	94	90	86	81	75	72	60	77	49	31	18	15	7	-					
Seaside Park 39°55.3'N., 74°05.0'W.	137	89	85	80	75	70	66	55	71	44	26	13	10	-						
Forked River (town) 39°50.1'N., 74°11.7'W.	132	84	80	75	70	65	61	50	66	39	21	8	-							
Barnegat Inlet 39°46.0'N., 74°06.3'W.	131	83	79	74	69	64	60	49	65	38	20	-								
Beach Haven 39°34.0'N., 74°14.8'W.	111	63	59	54	49	44	40	29	45	18	-									
Atlantic City 39°22.6'N., 74°24.9'W.	95	47	43	39	34	28	25	13	30	-										
Mays Landing 39°26.9'N., 74°43.4'W.	100	52	47	43	38	33	29	18	-											
Ocean City 39°17.3'N., 74°34.4'W.	82	34	30	25	20	15	11	-												
Sea Isle City 39°09.4'N., 74°42.0'W.	71	23	18	14	9	4	-													
Avalon 39°06.6'N., 74°44.0'W.	67	19	15	10	5	-														
Stone Harbor 39°03.4'N., 74°46.0'W.	62	14	9	5	-															
Wildwood 39°00.5'N., 74°49.8'W.	57	9	5	-																
Cape May Harbor 38°57.1'N., 74°52.6'W.	52	4	-																	
Cape May Canal (west entrance) 38°58.0'N., 74°58.0'W.	48	-																		
C & D Canal (east entrance) 39°33.8'N., 75°32.8'W.	-																			

*Outside distances between New York and Manesquan Inlet

Distances on Delaware Bay and River
(nautical miles)

	Trenton, NJ	Bordentown, NJ	(former) U.S. Steel Basin, PA	Burlington, NJ	Philadelphia, PA	Schuylkill River (mouth), PA	Chester, PA	Bridgeport, NJ	Marcus Hook, PA	Wilmington, DE	New Castle, DE	C & D Canal (east entrance)	Salem, NJ	Smyrna River (mouth), DE	Bridgeton, NJ	Mauricetown, NJ	St. Jones River (mouth), DE	Cape May Canal (west entrance)	Roosevelt Inlet, DE	Delaware Bay (entrance)
Delaware Bay (entrance) 38°50.5'N., 75°03.3'W.	115	112	110	103	87	80	72	72	68	62	58	51	54	39	51	33	20	9	6	-
Roosevelt Inlet, DE 38°47.7'N., 75°09.4'W.	116	113	111	104	88	81	73	73	69	63	59	52	55	40	52	37	20	14	-	
Cape May Canal (west entrance) 38°58.0'N., 74°58.0'W.	112	109	107	100	84	77	69	69	65	59	55	48	51	36	47	26	21	-		
St. Jones River (mouth), DE 39°04.0'N., 75°22.5'W.	97	94	92	85	69	63	55	55	51	45	40	34	36	21	35	30	-			
Mauricetown, NJ 39°17.1'N., 74°59.5'W.	115	112	110	103	87	80	72	72	68	62	58	51	54	39	51	-				
Bridgeton, NJ 39°25.5'N., 75°14.2'W.	100	97	95	88	72	65	57	57	53	47	43	36	39	25	-					
Smyrna River (mouth), DE 39°22.2'N., 75°30.2'W.	77	74	72	65	49	42	34	34	30	24	20	13	16	-						
Salem, NJ 39°34.6'N., 75°28.7'W.	69	66	64	57	41	34	26	26	22	16	12	5	-							
C & D Canal (east entrance) 39°33.8'N., 75°32.8'W.	64	61	59	52	36	29	21	21	17	11	7	-								
New Castle, DE 39°39.4'N., 75°33.6'W.	58	55	53	46	30	23	15	15	12	5	-									
Wilmington, DE 39°43.2'N., 75°31.5'W.	54	51	49	42	26	19	11	11	8	-										
Marcus Hook, PA 39°48.2'N., 75°25.2'W.	46	43	41	34	18	12	3	4	-											
Bridgeport, NJ 39°48.0'N., 75°21.3'W.	49	46	44	37	22	14	6	-												
Chester, PA 39°50.0'N., 75°22.0'W.	43	40	38	31	15	9	-													
Schuylkill River (mouth), PA 39°52.8'N., 75°11.9'W.	34	31	29	23	7	-														
Philadelphia, PA 39°56.8'N., 75°08.3'W.	28	25	23	16	-															
Burlington, NJ 40°04.9'N., 74°51.8'W.	12	9	7	-																
(former) U.S. Steel Basin, PA 40°08.2'N., 74°45.3'W.	5	2	-																	
Bordentown, NJ 40°09.1'N., 74°43.0'W.	4	-																		
Trenton, NJ 40°11.4'N., 74°45.4'W.	-																			

Chesapeake Bay Distances
(nautical miles)

	Chesapeake Bay (entrance)	Norfolk, VA	Richmond, VA	Petersburg, VA	Hopewell, VA	Suffolk, VA	Newport News, VA	West Point, VA	Yorktown, VA	Cape Charles, VA	Fredericksburg, VA	Crisfield, MD	Washtington, DC	Potomac River (mouth)	Salisbury, MD	Solomons, MD	Cambridge, MD	St. Michaels, MD	Annapolis, MD	Chestertown, MD	Baltimore, MD	Havre de Grace, MD	Chesapeake City, MD	C & D Canal (east entrance)
C & D Canal (east entrance) 39°33.8'N., 75°32.8'W.	187	209	284	259	265	209	207	214	192	169	243	134	213	122	143	103	98	83	65	78	62	33	13	-
Chesapeake City, MD 39°31.8'N., 75°48.9'W.	174	196	271	246	252	196	194	201	179	156	230	121	200	109	130	90	85	70	52	65	49	20	-	
Havre de Grace, MD 39°32.7'N., 76°05.0'W.	166	175	249	240	230	190	172	185	163	149	224	115	192	101	124	84	78	62	45	61	41	-		
Baltimore, MD 39°16.0'N., 76°34.5'W.	150	173	247	222	228	172	170	174	155	132	206	98	175	84	107	66	60	45	28	45	-			
Chestertown, MD 39°12.4'N., 76°03.8'W.	162	170	244	235	225	185	167	178	156	146	219	110	187	96	119	78	72	59	40	-				
Annapolis, MD 38°59.0'N., 76°28.6'W.	129	140	213	204	194	152	136	152	130	112	186	77	155	64	86	45	39	25	-					
St. Michaels, MD 38°47.2'N., 76°13.2'W.	132	141	215	206	196	156	138	149	126	116	190	80	156	65	89	48	36	-						
Cambridge, MD 38°34.4'N., 76°04.3'W.	123	132	206	197	187	147	129	140	117	107	182	72	149	58	81	39	-							
Solomons, MD 39°19.2'N., 76°27.4'W.	92	100	174	165	155	115	97	109	87	76	150	42	118	27	51	-								
Salisbury, MD 38°21.9'N., 75°36.3'W.	103	113	187	178	168	128	110	122	100	87	165	43	141	49	-									
Potomac River (mouth) 37°57.7'N., 76°16.7'W.	67	89	163	137	144	89	86	90	68	50	125	27	96	-										
Washington, DC 38°52.4'N., 77°01.4'W.	163	185	259	233	240	185	182	186	164	146	221	121	-											
Crisfield, MD 37°58.6'N., 75°51.9'W.	67	77	151	142	132	92	74	86	64	51	129	-												
Fredericksburg, VA 38°17.8'N., 77°27.2'W.	136	146	220	211	201	161	143	154	132	122	-													
Cape Charles, VA 37°15.9'N., 76°01.4'W.	21	32	106	97	88	48	29	50	28	-														
Yorktown, VA 37°14.4'N., 76°30.5'W.	34	58	132	101	114	55	55	22	-															
West Point, VA 37°31.6'N., 76°48.1'W.	56	66	140	123	122	78	63	-																
Newport News, VA 36°58.0'N., 76°26.0'W.	24	12	77	68	58	21	-																	
Suffolk, VA 36°44.3'N., 76°35.0'W.	42	29	98	89	79	-																		
Hopewell, VA 37°19.0'N., 77°16.4'W.	82	70	19	10	-																			
Petersburg, VA 37°14.1'N., 77°24.0'W.	92	80	28	-																				
Richmond, VA 37°31.4'N., 77°25.2'W.	101	90	-																					
Norfolk, VA 36°50.9'N., 76°17.9'W.	27	-																						
Chesapeake Bay (entrance) 36°56.3'N., 75°58.6'W.	-																							

Potomac River Distances
(nautical miles)

	Chain Bridge	Key Bridge	Washington, DC	Bladensburg, MD	Alexandria, VA	Mount Vernon, VA	Indian Head, MD	Occoquan, VA	Quantico, VA	Potomac River (US 301) Bridge	Dahlgren, VA	Colonial Beach, VA	Wicomico River (mouth), MD	Breton Bay (entrance), MD	Nomini Bay, VA	Lower Machodoc Creek, VA	Piney Point, MD	Yeocomico River (mouth), VA	St. Marys River (mouth), MD	Smith Creek (mouth), MD	Coan River (mouth), VA	Potomac River (mouth)
Potomac River (mouth) 37°57.7'N., 76°16.7'W.	101	98	96	101	91	84	76	80	68	44	43	38	31	26	27	23	16	13	12	11	11	-
Coan River (mouth), VA 37°59.7'N., 76°27.1'W.	96	93	90	96	86	79	70	75	63	38	37	33	26	22	22	18	11	6	8	17	-	
Smith Creek (mouth), MD 38°05.8'N., 76°24.0'W.	95	92	89	95	85	78	69	74	62	37	36	32	25	21	21	17	10	8	3	-		
St. Marys River (mouth), MD 38°06.2'N., 76°26.3'W.	93	90	87	93	83	76	68	72	60	35	34	30	23	19	19	15	8	7	-			
Yeocomico River (mouth), VA 38°02.1'N., 76°31.0'W.	94	91	88	94	84	76	68	72	61	36	35	31	24	19	20	16	9	-				
Piney Point, MD 38°08.0'N., 76°32.0'W.	85	82	80	85	75	68	60	64	52	28	27	22	15	11	11	7	-					
Lower Machodoc Creek, VA 38°08.5'N., 76°39.1'W.	80	77	75	80	70	63	55	59	47	22	21	17	10	6	5	-						
Nomini Bay, VA 38°08.6'N., 76°43.4'W.	78	75	72	78	68	60	52	57	45	20	19	15	8	6	-							
Breton Bay (entrance), MD 38°14.0'N., 76°41.8'W.	79	76	74	79	69	62	54	58	46	21	20	16	9	-								
Wicomico River (mouth), MD 38°14.5'N., 76°49.1'W.	71	68	66	71	61	53	45	50	38	13	12	9	-									
Colonial Beach, VA 38°14.4'N., 76°57.9'W.	68	65	63	68	58	51	43	47	35	11	10	-										
Dahlgren, VA 38°19.1'N., 77°02.1'W.	63	60	58	63	53	46	38	42	30	6	-											
Potomac River (US 301) Bridge 38°21.7'N., 76°59.4'W.	58	55	52	58	48	40	32	36	24	-												
Quantico, VA 38°31.2'N., 76°17.2'W.	33	30	28	34	24	16	8	12	-													
Occoquan, VA 38°41.0'N., 77°15.4'W.	33	30	27	33	23	15	7	-														
Indian Head, MD 38°36.4'N., 77°10.0'W.	26	23	20	26	16	8	-															
Mount Vernon, VA 38°42.3'N., 77°05.3'W.	19	16	13	19	9	-																
Alexandria, VA 38°48.2'N., 77°02.3'W.	10	7	4	10	-																	
Bladensburg, MD 38°56.1'N., 76°56.4'W.	14	11	8	-																		
Washington, DC 38°52.4'N., 77°01.4'W.	8	5	-																			
Key Bridge 38°54.1'N., 77°04.2'W.	3	-																				
Chain Bridge 38°55.7'N., 77°07.0'W.	-																					

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.

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

Distance (nauticalmiles)	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
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
		1.07639×10^5	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 6,076.12 feet
statute mile	5,280 feet 1,609.3 meters 1.6093 kilometers
cable	0.1 nautical mile (CN) 720 feet (US)
fathom	6 feet 1.8288 meters
foot	0.3048 meter
inch	2.54 centimeters
meter	39.37 inches 3.281 feet 1.0936 yards
kilometer	1,000 meters
knot	1.6877 feet per second 0.5144 meters per second
miles per hour (statute)	1.466 feet per second 0.44704 meters per second
acre	43,560 square feet 4,046.82 square meters
pound (avoirdupois)	453.59 gram
gram	0.0022046 pound (avoirdupois) 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)

Centerline Channel Control Coordinates
(U.S. Army Corps of Engineers)

Philadelphia, PA to Trenton, NJ

Point	Centerline Latitude/Longitude
1	39°58'35.89512"N., 75°04'48.28955"W.
2	39°58'42.39603"N., 75°04'25.88754"W.
3	39°59'16.00467"N., 75°03'47.77305"W.
4	40°00'12.15001"N., 75°03'24.37327"W.
5	40°00'26.53372"N., 75°03'09.47743"W.
6	40°00'57.29306"N., 75°01'57.60590"W
7	40°01'21.71051"N., 75°00'31.75993"W
8	40°02'23.72342"N., 74°59'19.18058"W.
9	40°03'25.11735"N., 74°57'35.73943"W.
10	40°04'14.61350"N., 74°55'38.72299"W.
11	40°04'13.74249"N., 74°54'47.94421"W.
12	40°04'42.40000"N., 74°53'07.50655"W.
13	40°04'55.18578"N., 74°51'48.89976"W.
14	40°05'29.89826"N., 74°51'24.41079"W.
15	40°05'37.69114"N., 74°51'13.51839"W.
16	40°05'56.28486"N., 74°50'29.73883"W.
17	40°06'15.88357"N., 74°50'09.10107"W.
18	40°07'25.19657"N., 74°49'39.80191"W.

Point	Centerline Latitude/Longitude
19	40°07'34.22044"N., 74°49'29.49554"W.
20	40°07'40.41635"N., 74°49'14.06402"W.
21	40°07'41.34734"N., 74°48'59.44053"W.
22	40°07'12.25776"N., 74°47'21.36829"W.
23	40°07'15.96071"N., 74°46'54.94540"W.
24	40°08'00.09210"N., 74°45'46.04408"W.
25	40°08'07.12501"N., 74°45'20.51723"W.
26	40°08'04.27024"N., 74°44'39.87488"W.
27	40°08'07.02033"N., 74°44'27.29246"W.
28	40°08'46.91637"N., 74°43'25.70640"W.
29	40°09'00.47824"N., 74°43'18.24515"W.
30	40°09'39.42068"N., 74°43'19.24918"W.
31	40°10'40.79831"N., 74°44'16.31010"W.
32	40°10'49.50106"N., 74°44'31.19060"W.
33	40°10'56.96672"N., 74°44'59.37255"W.
34	40°11'09.56954"N., 74°45'17.39812"W.
35	40°11'19.82539"N., 74°45'23.75232"W.
36	40°11'31.65023"N., 74°45'26.99340"W.

Philadelphia, PA to Atlantic Ocean

Point	Centerline Latitude/Longitude
1	39°58'24.29332"N., 75°06'19.22985"W.
2	39°57'55.70561"N., 75°07'30.53522"W.
3	39°57'45.70670"N., 75°07'47.31903"W.
4	39°57'36.96777"N., 75°07'59.25461"W.
5	39°57'26.09385"N., 75°08'06.54796"W.
6	39°57'16.83192"N., 75°08'10.43414"W.
7	39°57'03.83701"N., 75°08'14.72435"W.
8	39°56'51.80909"N., 75°08'17.66148"W.
9	39°56'37.80718"N., 75°08'20.35261"W.
10	39°56'25.94826"N., 75°08'20.99764"W.
11	39°56'02.68342"N., 75°08'20.43759"W.
12	39°55'50.17550"N., 75°08'18.57848"W.
13	39°55'27.61465"N., 75°08'11.29507"W.
14	39°55'03.53282"N., 75°07'59.37839"W.
15	39°54'53.43989"N., 75°07'55.16914"W.
16	39°54'43.15697"N., 75°07'52.44597"W.
17	39°54'30.95805"N., 75°07'51.76291"W.
18	39°54'18.74513"N., 75°07'54.09703"W.
19	39°53'27.42546"N., 75°08'15.50218"W.
20	39°53'00.65061"N., 75°08'32.29114"W.
21	39°52'56.54363"N., 75°08'38.01448"W.

Point	Centerline Latitude/Longitude
22	39°52'51.60964"N., 75°08'49.30815"W.
23	39°52'49.84361"N., 75°09'14.61865"W.
24	39°52'57.01533"N., 75°11'29.68060"W.
25	39°51'16.10538"N., 75°14'27.21620"W.
26	39°50'52.83309"N., 75°15'51.65284"W.
27	39°50'57.88182"N., 75°19'47.69097"W.
28	39°50'29.99470"N., 75°21'03.64877"W.
29	39°49'20.59104"N., 75°22'53.41615"W.
30	39°47'02.85156"N., 75°27'32.21922"W.
31	39°44'33.50781"N., 75°29'50.17496"W.
32	39°40'24.37747"N., 75°31'26.74706"W.
33	39°37'35.64029"N., 75°34'41.27460"W.
34	39°37'02.46111"N., 75°34'47.39016"W.
35	39°33'07.45466"N., 75°32'21.21883"W.
36	39°28'58.95540"N., 75°33'48.29555"W.
37	39°27'20.27234"N., 75°33'37.30616"W.
38	39°20'59.92401"N., 75°26'16.11179"W.
39	39°13'56.02831"N., 75°18'06.62977"W.
40	39°10'50.66996"N., 75°16'18.57589"W.
41	39°05'04.57301"N., 75°11'08.61589"W.
42	38°55'10.70000"N., 75°05'45.70000"W.

Tips for Boating Clean & Green

• Practice Preventive Engine Maintenance. Keep your engine well tuned and practice preventative engine maintenance by regularly checking hoses and lines for chaffing or deterioration.

• Use Oil Absorbents. Place and secure an oil absorbent under the engine and in the bilge. Avoid using bilge cleaners as they may get discharged overboard. It is illegal to use soap to disperse fuel and oil spills. Report oil and chemical spills by calling both the National Response Center (800) 424–8802 and 1–800–OILS–911

• Spill-Proof Your Fueling Practices. Use a spill proof system like a portable oil change pump to change your oil. Use oil absorbents when fueling and changing the oil. Do not top-off your fuel tank; leave it 10 percent empty to allow fuel to expand as it warms.

• Reduce Greywater Discharges. Use shore-side facilities for laundry, showers and dish washing whenever possible. Use only phosphate-free and biodegradable soaps. The legality of discharging greywater into a marina or within three miles off the coast varies from place to place. In some areas, there are local ordinances and codes that allow harbor patrol to issue citations for any discharge that is not "clean and clear". To avoid any potential fines and to protect the aquatic environment, do not discharge greywater overboard.

• Dispose of Hazardous Waste Properly: Recycle and properly dispose of absorbents, used oil, oil filters, paint, and batteries at your local household hazardous waste collection site.

• Minimize boat cleaning and maintenance conducted on the water. Use more elbow grease. Use products that are water-based, biodegradable, phosphate-free, and labeled as less toxic. Check out less toxic cleaning alternatives for all types of uses by visiting: http://www.coastal.ca.gov/ccbn/lesstoxic.html. Buy only the amount that you need and use products for spot cleaning only. Properly handle and store materials. Dispose of hazardous waste legally and safely.

• Reduce Discharges from Bottom Paints. Consider alternative, non-biocide hull coatings. Clean the bottom with a soft, non-abrasive sponge. Use hull cleaning companies who use green management practices such as monitoring their divers and using non-abrasive scrubbing agents that do not release paint into the water. For more information visit: http://www.ucanr.org/sites/coast.

• Stow it, Don't Throw it. Keep your trash on-board. Recycle plastic, glass, metal, and paper. Avoid excess packaging.

• Dump at the Pump! It is illegal to discharge untreated sewage anywhere within the three-mile territorial limit including lakes, rivers, reservoirs or coastal waters. Never discharge treated sewage into "restricted waters" such as a marina, swimming/wading areas, a sanctuary, poorly flushed areas, lakes, reservoirs, or freshwater impoundments and federal No Discharge Zones. Use sewage pumpouts, dump stations, or mobile-pumpout services.
For locations visit:
CA – http://www.dbw.ca.gov
WA – http://www.parks.wa.gov/boating/pumpout
OR – http://www.boatoregon.com/OSMB/Clean/CVA.shtml

• Prevent the Spread of Aquatic Invasive Species. Before leaving any body of water, examine your boat and equipment and remove any visible mud, plants, or animals before transporting equipment. Never release plants or animals into a body of water or storm drains unless they came out of that body of water. Clean and dry anything that came in contact with the water. For cleaning procedures visit: http://www.protectyourwaters.net/

For hazardous waste recycling or collection centers call 1-800-CLEAN-UP or visit http://www.earth911.org

Weekly Record of Updates

Week of	Action	Chapter	Paragraph(s)	User notes
19 DEC 2011				U.S. Coast Pilot 3, 44th Edition has been issued.
25 DEC 2011	**No Correction**			
01 JAN 2012	**No Correction**			
08 JAN 2012	**No Correction**			
15 JAN 2012	**No Correction**			
22 JAN 2012	**No Correction**			
29 JAN 2012	**Insert**	2	651.01	
	Change	12	64	
05 FEB 2012	**No Correction**			
12 FEB 2012	**No Correction**			
19 FEB 2012	**No Correction**			
26 FEB 2012	**No Correction**			
04 MAR 2012	**No Correction**			
11 MAR 2012	**Change**	8	62	
18 MAR 2012	**No Correction**			
25 MAR 2012	**No Correction**			
01 APR 2012	**Change**	2	604	
	Change	2	735	
	Insert	2	735.01-735.03	
	Insert	2	740.01-740.02	
	Change	14	144	
08 APR 2012	**No Correction**			
15 APR 2012	**No Correction**			
22 APR 2012	**No Correction**			
29 APR 2012	**No Correction**			
06 MAY 2012	**No Correction**			
13 MAY 2012	**No Correction**			
20 MAY 2012	**Change**	6	165	
	Change	11	27	
	Change	11	86	
	Change	11	95	
27 MAY 2012	**No Correction**			
03 JUN 2012	**No Correction**			
10 JUN 2012	**No Correction**			
17 JUN 2012	**No Correction**			

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Updates are available from NOAA at http://nauticalcharts.noaa.gov/nsd/cpdownload.htm.

Week of	Action	Chapter	Paragraph(s)	User notes
24 JUN 2012	**No Correction**			
01 JUL 2012	**No Correction**			
08 JUL 2012	**No Correction**			
15 JUL 2012	**Change**	2	627-628	
	Insert	2	657-657.02	
	Change	2	663	
22 JUL 2012	**No Correction**			
29 JUL 2012	**Insert**	2	690-690.04	
	Change	5	33	
	Change	15	144	
05 AUG 2012	**No Correction**			
12 AUG 2012	**No Correction**			
19 AUG 2012	**No Correction**			
26 AUG 2012	**No Correction**			
02 SEP 2012	**Change**	4	40	
09 SEP 2012	**No Correction**			
16 SEP 2012	**Change**	5	121	
	Change	12	202	
23 SEP 2012	**Change**	14	123	

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