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

ANNETTE ISLAND, AK (55°02'N, 131°34'W) 108 feet (33 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)	1011.4	1010.8	1011.5	1013.5	1016.5	1016.4	1018.4	1017.1	1015.2	1010.9	1009.4	1009.5	1013.4	24
TEMPERATURE (°F)														
Mean	34.3	36.9	39.1	43.6	49.5	54.5	58.3	58.7	54.3	47.0	40.0	36.2	46.1	47
Mean daily maximum	38.7	41.5	44.2	49.4	55.8	60.6	64.2	64.6	59.9	51.6	44.2	40.3	51.3	47
Mean daily minimum	29.4	31.8	33.5	37.2	42.7	47.9	51.9	52.2	48.1	41.8	35.3	31.6	40.4	47
Extreme (highest)	61	65	64	82	88	89	89	90	82	71	67	62	90	47
Extreme (lowest)	1	2	1	21	31	37	40	40	33	18	10	1	1	47
RELATIVE HUMIDITY														
Average percentage	78.9	77.8	76.2	75.5	76.3	78.3	80.4	82.2	83.4	83.7	81.7	81.2	79.7	27
CLOUD COVER														
Percent of time clear	13.9	11.6	13.6	11.6	11.7	7.0	10.4	12.1	13.0	8.0	9.0	9.5	10.9	21
Percent of time scattered	7.1	8.5	9.1	10.1	11.3	11.0	10.3	11.0	11.3	7.9	7.3	7.4	9.3	21
Percent of time broken	9.6	10.7	13.8	14.8	15.9	15.1	14.7	15.5	14.0	11.9	11.4	12.1	13.3	21
Percent of time overcast	65.4	65.2	58.7	58.1	55.8	59.9	57.6	55.3	56.8	66.5	67.9	66.9	61.2	21
PRECIPITATION (inches)														
Mean amount	10.1	9.0	8.6	8.3	6.3	4.9	4.6	6.7	9.8	16.3	13.1	12.1	110.0	47
Greatest amount	20.6	18.0	23.5	21.3	14.6	10.4	10.8	20.2	17.4	34.8	28.0	28.9	189.1	47
Least amount	0.7	0.1	2.1	1.9	1.5	0.6	0.5	0.7	2.5	7.0	3.6	3.8	77.6	47
Maximum amount (24 hours)	3.8	3.8	3.9	4.7	4.2	3.3	2.6	3.8	3.4	6.6	4.5	4.8	6.6	47
SNOW														
Mean amount	12.3	10.2	8.3	2.2	0.1	0.0	0.0	0.0	0.0	0.2	3.7	10.6	47.7	47
Greatest amount	36.3	33.4	46.9	22.2	5.0	0.0	0.0	0.0	0.0	4.2	24.8	44.8	136.4	47
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	7.1	47
Maximum amount (24 hours)	12.3	10.5	11.8	14.0	5.0	0.0	0.0	0.0	0.0	2.4	8.6	12.8	14.0	47
Mean number of days	12	11	12	5	Miss	0	0	0	0	1	7	12	60	47
WIND														
Percentage with gales	0.72	0.17	0.14	0.27	0.07	0.02	0.00	0.00	0.07	0.50	0.40	0.87	0.27	24
Mean wind speed (knots)	10.7	10.8	9.7	9.7	8.1	8	7	7.2	8	10.4	11.1	10.9	9.3	24
Direction (percentage of observations)														
North	7.6	6.3	4.9	3.6	2.6	1.8	2.6	2.6	3.2	3.4	5.7	6.1	4.2	24
North Northeast	4.6	4.0	2.8	1.9	1.0	0.8	0.5	0.7	1.6	2.2	3.3	4.0	2.3	24
Northeast	6.4	5.7	4.5	2.3	1.4	1.0	0.5	0.8	1.9	2.8	4.9	5.9	3.2	24
East Northeast	5.8	5.2	4.9	3.2	1.7	0.8	0.4	0.8	1.2	3.0	5.1	6.2	3.2	24
East	5.9	4.9	4.7	3.8	3.0	1.9	1.5	2.1	2.6	4.9	6.2	6.4	4.0	24
East Southeast	15.9	14.0	13.3	12.2	8.9	8.1	7.0	7.3	9.3	14.9	17.7	16.2	12.0	24
Southeast	14	12.6	14.8	15.9	15.1	16.0	15.5	15.8	17.1	16.9	14.6	12.7	15.1	24
South Southeast	7.1	10.3	10.1	12.9	14.8	17.2	17.8	15.6	13.5	13.9	8.5	8.5	12.5	24
South	4.9	6.7	6.8	8.2	9.9	10.6	11.0	9.1	7.8	8.8	6.9	6.4	8.1	24
South Southwest	2.3	2.6	3.1	3.9	3.7	5.1	4.3	3.5	3.0	3.8	3.0	3.1	3.4	24
Southwest	1.5	2.2	1.9	2.4	2.6	2.9	2.9	2.3	2.0	2.5	2.4	2.5	2.4	24
West Southwest	1.1	1.4	1.8	2.1	2.4	2.7	2.5	2.1	2.2	1.8	1.6	2.1	2.0	24
West	1.1	1.8	2.2	2.5	3.4	3.5	3.5	3.2	2.9	2.1	1.3	1.7	2.4	24
West Northwest	2.1	2.8	4.0	4.5	6.8	7.6	7.5	8.4	6.2	2.8	1.9	1.8	4.7	24
Northwest	3.9	5.2	6.4	6.7	8.9	8.5	9.0	10.4	9.4	4.9	3.8	3.2	6.7	24
North Northwest	7.2	8.4	8.3	7.6	7.1	6.4	6.6	8.3	9.4	5.5	7.1	7.0	7.4	24
Calm	8.6	5.9	5.8	6.3	7.0	5.7	7.4	7.6	7.2	6.3	6.1	6.4	6.7	24
Direction (mean speed, knots)														
North	7.6	7.5	7.1	7.8	6.1	5.2	6.5	6.1	6.2	6.4	7.3	7.5	7.0	24
North Northeast	7.7	8.7	6.8	7.3	5.4	5.7	4.5	4.7	4.8	6.5	6.5	7.0	6.9	24
Northeast	10.6	10.3	9.0	9.0	5.5	4.2	4.5	4.2	5.7	8.6	8.8	9.1	8.8	24
East Northeast	11.7	11.0	10.4	9.4	7.0	5.3	4.4	5.3	5.5	8.9	10.5	10.9	10.0	24
East	11.5	12.1	10.0	10.3	8.0	7.8	5.6	7.3	8.4	10.3	12.1	10.9	10.3	24
East Southeast	14.6	14.2	12.6	12.5	10.7	10.2	8.1	8.9	10.2	12.9	14.4	14.1	12.6	24
Southeast	15.4	15.0	13.4	13.4	10.7	10.0	8.0	8.6	10.8	14.1	15.6	15.3	12.4	24
South Southeast	16.5	15.6	13.5	13.1	10.5	10.1	8.7	9.4	10.7	14.9	16.5	17.6	12.3	24
South	12.2	12.1	10.5	9.8	8.7	8.1	7.6	7.6	8.7	11.1	12.2	12.9	9.8	24
South Southwest	10.0	9.7	8.5	8.5	7.0	7.0	6.7	6.9	7.9	9.1	10.8	10.5	8.3	24
Southwest	8.4	8.4	7.5	7.6	6.9	6.9	6.2	6.8	6.6	8.0	8.3	8.1	7.4	24
West Southwest	8.3	8.0	7.0	7.4	6.7	6.5	6.2	6.0	5.8	6.8	7.8	7.8	6.9	24
West	5.5	6.6	5.9	6.5	6.2	5.9	5.7	5.8	5.2	5.8	6.4	7.0	6.0	24
West Northwest	5.6	6.7	6.7	7.2	6.9	6.7	6.3	6.7	6.1	6.3	6.2	6.0	6.5	24
Northwest	6.7	7.0	7.3	7.4	7.1	7.4	7.3	7.3	7.0	6.6	7.2	6.8	7.1	24
North Northwest	8.2	8.4	8.5	8.3	8.0	7.8	8.4	7.7	7.8	7.0	8.1	8.7	8.1	24
VISIBILITY														
Mean number of days with fog	11	10	10	8	9	11	14	14	15	14	11	12	139	39

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

KETCHIKAN, AK (55°21'N, 131°42'W) 95 feet (29 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	33.7	37.0	38.8	43.6	49.5	54.7	58.4	58.9	54.2	46.8	40.1	36.2	46.1	42
Mean daily maximum	38.9	42.2	44.6	50.4	56.9	61.8	65.4	65.6	60.6	52.1	45.0	40.8	52.1	42
Mean daily minimum	28.0	31.4	32.5	36.2	41.6	47.0	51.0	51.6	47.3	40.9	34.7	31.1	39.5	42
Extreme (highest)	62	63	60	75	87	89	87	89	80	69	65	62	89	42
Extreme (lowest)	-1	2	3	20	28	35	39	37	29	17	8	-1	-1	42
PRECIPITATION (inches)														
Mean amount	13.0	13.1	10.5	11.2	9.17	7.32	7.32	10.3	13.6	22.7	16.9	15.6	151.1	42
Greatest amount	31.2	25.6	21.7	22.5	21.0	14.3	17.5	25.3	28.0	42.3	42.9	30.6	188.9	42
Least amount	1.6	0.8	2.7	2.0	2.5	0.9	0.9	0.9	1.7	10.4	2.8	4.9	88.4	42
Maximum amount (24 hours)	6.8	6.1	3.5	4.5	3.8	4.9	3.9	7.9	7.5	8.7	6.1	7.2	8.7	42
SNOW														
Mean amount	13.4	8.9	3.6	0.3	T	0.0	0.0	0.0	0.0	0.1	2.4	8.5	37.0	33
Greatest amount	38.0	34.6	32.5	5.2	T	0.0	0.0	0.0	0.0	2.5	19.6	39.0	110.1	33
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33
Maximum amount (24 hours)	13.0	19.0	10.0	5.2	T	0.0	0.0	0.0	0.0	1.0	8.0	16.0	19.0	33
Mean number of days	6	3	2	Miss	Miss	0	0	0	0	Miss	1	4	16	29

CRAIG, AK (55°29'N, 133°09'W) 13 feet (4 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	31.1	36.2	38.4	43.3	48.5	53.8	57.2	57.5	53.8	45.8	40.6	36.0	45.1	6
Mean daily maximum	37.2	41.1	43.5	49.8	55.7	60.4	63.1	64.2	59.8	51.3	45.7	40.8	50.9	7
Mean daily minimum	26.1	31.3	32.5	36.8	41.3	46.7	50.8	50.5	47.8	40.2	35.7	31.6	39.1	7
Extreme (highest)	55	59	63	70	73	77	79	82	73	73	59	51	82	7
Extreme (lowest)	2	13	21	23	25	30	41	33	32	26	12	2	2	7
PRECIPITATION (inches)														
Mean amount	8.2	11.2	9.5	9.9	5.8	2.6	4.1	5.6	9.6	14.2	15.0	12.3	108.6	8
Greatest amount	16.3	16.8	13.0	12.8	9.2	3.4	6.3	8.3	17.1	20.9	22.3	17.6	114.4	8
Least amount	0.4	5.5	6.4	5.8	2.8	1.8	2.3	2.5	4.2	10.1	5.6	7.0	78.0	8
Maximum amount (24 hours)	3.9	4.9	2.9	7.5	3.3	1.1	1.4	2.5	3.2	8.9	7.3	2.3	8.9	8
SNOW														
Mean amount	6.4	22.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	2.1	30.5	5
Greatest amount	11.6	44.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	5.7	49.0	5
Least amount	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	n/a	5
Maximum amount (24 hours)	4.0	9.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	2.5	9.0	5
Mean number of days	9	5	3	Miss	0	0	0	0	0	0	1	4	22	5
VISIBILITY														
Mean number of days with fog	4	8	6	5	2	5	8	7	7	5	4	6	67	5

PORT ALEXANDER, AK (56°15'N, 134°39'W) 10 feet (3 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	34.4	35.1	37.7	42.2	47.7	52.9	56.5	56.0	51.6	45.2	39.3	36.0	44.5	30
Mean daily maximum	37.8	38.7	42.2	47.8	54.3	60.1	63.9	62.9	57.3	49.4	43.0	39.5	49.7	30
Mean daily minimum	30.5	31.0	32.8	36.2	40.7	45.3	48.6	48.7	45.3	40.5	35.2	32.0	38.8	30
Extreme (highest)	52	52	54	68	75	81	82	80	74	61	55	54	82	30
Extreme (lowest)	4	4	7	21	29	33	40	37	31	23	10	5	4	30
PRECIPITATION (inches)														
Mean amount	17.6	13.5	13.0	10.0	8.7	6.8	8.2	12.2	18.4	22.7	20.0	18.3	169.8	30
Greatest amount	39.3	26.4	25.2	15.5	17.3	13.3	18.9	25.7	35.7	38.9	32.0	27.0	206.3	30
Least amount	3.8	1.6	1.7	3.8	2.7	0.9	1.6	1.4	4.9	13.8	6.7	3.7	99.9	30
Maximum amount (24 hours)	7.1	4.6	4.0	4.2	4.9	4.1	7.6	5.8	8.4	6.9	6.9	6.2	8.4	30
SNOW														
Mean amount	22.3	18.4	8.8	2.3	0.0	0.0	0.0	0.0	0.0	0.4	4.9	14.7	71.9	30
Greatest amount	65.3	61.5	37.0	16.4	0.5	0.0	0.0	0.0	0.0	6.6	38.9	48.7	168.8	30
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	19.6	30
Maximum amount (24 hours)	24.1	20.1	14.2	10.1	0.5	0.0	0.0	0.0	0.0	4.5	12.4	15.0	24.1	30
Mean number of days	12	10	10	5	1	0	0	0	0	1	5	10	54	22
VISIBILITY														
Mean number of days with fog	14	14	14	13	16	17	21	21	19	17	16	16	198	22

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

PETERSBURG, AK (56°49'N, 132°58'W) 115 feet (35 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)	1011.5	1010.0	1012.1	1013.1	1016.4	1015.8	1017.2	1016.2	1014.1	1009.8	1007.8	1007.3	1012.6	8
TEMPERATURE (°F)														
Mean	26.3	31.8	34.6	40.2	46.8	52.9	56.0	55.1	50.4	43.3	35.5	30.5	41.9	31
Mean daily maximum	31.3	37.1	40.7	47.6	54.9	60.7	63.6	62.6	56.9	48.3	40.1	34.7	48.2	31
Mean daily minimum	20.7	26.1	27.9	32.3	38.3	44.7	48.0	47.2	43.4	37.7	30.5	25.7	35.2	31
Extreme (highest)	62	58	56	68	74	83	83	79	75	67	64	58	83	31
Extreme (lowest)	-12	-7	-6	13	21	30	37	33	22	21	-2	-10	-12	31
RELATIVE HUMIDITY														
Average percentage	80.0	82.2	79.9	78.9	82.0	80.4	84.2	86.4	89.6	87.9	85.3	86.1	83.6	8
CLOUD COVER														
Percent of time clear	20.9	10.2	18.1	13.6	9.6	9.8	11.1	14.9	15.4	7.4	12.1	13.7	13.2	8
Percent of time scattered	7.1	6.8	8.1	7.1	7.5	9.5	8.2	11.9	7.7	4.7	6.5	5.5	7.5	8
Percent of time broken	9.4	11.1	10.8	11.8	12.1	15.3	12.4	12.2	11.0	9.8	10.7	8.4	11.2	8
Percent of time overcast	59.9	68.7	58.4	63.3	65.3	60.2	64.3	56.8	62.3	74.2	67.7	69.7	64.2	8
PRECIPITATION (inches)														
Mean amount	8.9	8.3	7.0	7.0	6.2	5.2	5.4	7.6	11.0	16.3	11.7	10.3	104.8	31
Greatest amount	18.5	17.0	11.8	11.1	12.8	8.8	12.0	14.0	20.5	26.9	26.8	20.5	133.8	31
Least amount	1.4	1.2	1.8	2.9	1.6	0.5	1.5	1.2	2.0	8.2	2.6	3.8	71.3	31
Maximum amount (24 hours)	3.8	4.3	2.4	2.4	2.2	2.0	2.8	4.0	4.1	4.2	5.5	3.7	5.5	31
SNOW														
Mean amount	30.9	20.3	18.4	2.9	T	0.0	0.0	0.0	T	0.5	9.1	25.3	107.4	31
Greatest amount	92.6	73.6	61.9	20.5	T	0.0	0.0	0.0	T	11.0	32.0	73.0	200.2	31
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.0	31
Maximum amount (24 hours)	18.0	12.0	18.0	5.0	T	0.0	0.0	0.0	T	5.0	15.0	17.0	18.0	31
Mean number of days	21	17	18	9	1	0	0	0	Miss	2	9	18	95	24
WIND														
Percentage with gales	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.10	0.00	0.00	0.12	8
Mean wind speed (knots)	4.8	5.1	4.9	5.5	4.3	4.5	3.8	3.9	4.2	5.2	5.0	4.9	4.7	8
Direction (percentage of observations)														
North	2.0	2.7	2.3	2.8	1.3	2.1	2.9	1.7	2.6	2.2	2.7	2.4	2.3	8
North Northeast	4.9	5.4	5.1	4.0	3.2	2.0	1.7	3.5	4.5	4.6	4.2	4.6	4.0	8
Northeast	4.6	4.6	4.3	3.3	4.5	5.4	9.2	9.9	6.0	4.1	3.2	3.7	5.3	8
East Northeast	4.9	5.4	4.3	6.2	6.8	10.7	8.5	9.7	8.2	5.0	4.3	4.1	6.5	8
East	2.6	3.7	7.8	10.2	10.8	10.2	9.2	8.5	8.1	3.0	3.1	3.6	6.7	8
East Southeast	5.4	7.9	10.0	12.5	11.8	14.9	13.1	11.2	11.5	9.9	6.1	6.1	10.0	8
Southeast	3.3	4.6	5.1	5.3	4.7	5.5	10.6	10.0	6.6	8.6	6.8	4.3	6.3	8
South Southeast	5.0	5.9	5.3	6.8	4.3	2.4	2.0	2.4	4.6	8.9	9.0	5.7	5.2	8
South	2.1	2.5	1.5	2.1	1.5	0.8	0.9	0.5	1.6	3.2	3.0	2.2	1.8	8
South Southwest	1.9	3.1	2.7	3.3	2.6	1.5	1.1	1.4	3.0	4.1	3.2	2.9	2.6	8
Southwest	7.0	6.5	4.2	4.9	5.6	7.0	3.9	4.5	4.4	4.8	6.6	7.2	5.5	8
West Southwest	28.4	18.6	22.4	18.8	18.8	13.9	8.4	8.5	9.9	15.9	18.0	23.0	17.1	8
West	7.0	6.6	4.6	4.4	4.0	4.5	3.0	3.4	3.0	3.3	6.7	7.0	4.8	8
West Northwest	3.2	4.4	4.7	3.8	2.1	2.1	1.9	2.1	1.4	2.4	3.6	3.9	3.0	8
Northwest	1.9	2.3	1.3	1.7	0.7	1.3	2.0	1.3	1.6	1.5	1.6	2.1	1.6	8
North Northwest	0.9	1.0	1.6	1.5	1.0	1.4	1.2	1.3	1.4	1.7	1.9	2.0	1.4	8
Calm	15.0	15.0	13.0	8.5	16.1	14.2	20.5	20.1	21.6	16.7	15.9	15.2	16.0	8
Direction (mean speed, knots)														
North	5.6	6.4	6.5	4.7	4.9	3.2	3.8	3.8	3.8	3.3	3.8	4.5	4.5	8
North Northeast	9.0	7.5	6.0	6.6	4.9	4.2	3.9	4.2	4.4	4.7	5.7	6.6	5.9	8
Northeast	6.2	5.3	6.0	5.5	5.4	5.7	4.7	4.5	4.2	4.4	4.8	4.1	5.0	8
East Northeast	6.1	5.8	5.5	5.6	5.3	5.9	5.8	5.6	5.1	4.9	5.6	5.4	5.6	8
East	4.7	5.4	5.4	5.3	4.7	4.9	5.1	4.6	4.5	4.7	5.0	4.4	4.9	8
East Southeast	7.1	6.3	6.4	7.2	5.4	5.6	5.3	5.4	5.7	6.7	5.5	6.7	6.0	8
Southeast	7.8	8.9	7.2	8.2	6.4	5.6	4.4	4.9	6.9	9.5	8.2	9.3	7.0	8
South Southeast	10.9	9.4	8.9	9.5	7.3	6.9	5.1	6.7	8.6	10.1	10.1	10.5	9.3	8
South	5.5	6.2	4.6	6.8	5.7	5.4	4.4	3.5	7.1	9.3	6.3	5.8	6.4	8
South Southwest	5.4	7.6	6.1	6.8	5.3	7.5	5.5	5.5	8.6	8.3	6.6	8.0	7.0	8
Southwest	4.8	5.2	5.2	5.4	5.0	5.5	4.8	4.1	4.5	5.1	5.2	4.7	5.0	8
West Southwest	4.4	4.7	4.4	4.9	4.8	4.9	4.5	4.7	4.8	4.4	4.9	4.8	4.7	8
West	4.1	4.5	4.5	4.3	4.0	4.3	4.4	4.1	3.7	3.8	4.1	4.0	4.2	8
West Northwest	4.8	6.5	6.2	5.0	4.0	4.4	4.2	5.3	3.8	4.6	6.7	6.8	5.5	8
Northwest	3.4	4.5	5.5	3.8	5.2	4.0	3.6	4.3	3.5	4.0	4.3	5.5	4.2	8
North Northwest	4.7	5.0	3.5	4.6	4.2	3.8	3.4	3.7	4.0	4.2	3.8	4.1	4.0	8
VISIBILITY														
Mean number of days with fog	6	5	5	4	5	5	10	11	11	8	6	6	82	24

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

SITKA, AK (57°04'N, 135°21'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)	1000.1	1000.6	1004.1	1010.3	1008.9	1010.4	1014.2	1012.4	1009.0	1008.4	1003.7	1000.6	1006.9	33
TEMPERATURE (°F)														
Mean	32.2	36.3	37.0	41.4	47.1	52.4	56.0	57.0	53.1	45.9	39.4	35.4	44.5	22
Mean daily maximum	36.3	40.5	41.8	47.2	53.1	57.8	60.8	61.8	58.0	50.3	43.3	39.0	49.2	22
Mean daily minimum	27.6	31.6	31.8	35.2	40.7	46.5	50.7	51.6	47.6	40.9	35.0	31.4	39.3	22
Extreme (highest)	59	61	59	70	82	85	82	84	75	68	65	59	85	22
Extreme (lowest)	0	1	4	22	29	35	43	40	31	23	13	1	0	22
RELATIVE HUMIDITY														
Average percentage	74.3	76.1	74.3	75.4	77.2	80.3	84.1	84.6	83.6	79.1	77.0	77.8	78.7	17
CLOUD COVER														
Percent of time clear	20.3	14.8	17.9	12.6	11.1	6.9	6.7	10.8	11.7	9.0	11.6	13.4	12.2	17
Percent of time scattered	8.1	6.5	8.0	7.3	7.4	6.4	7.7	6.6	7.5	6.0	6.1	5.6	6.9	17
Percent of time broken	10.0	8.2	9.3	10.9	11.1	10.1	9.4	9.2	11.0	10.8	10.3	8.1	9.9	17
Percent of time overcast	59.5	68.1	61.7	65.4	66.9	73.1	73.2	70.0	66.5	70.7	69.0	70.5	67.9	17
PRECIPITATION (inches)														
Mean amount	6.4	6.5	6.0	5.3	5.0	3.5	4.9	7.4	10.5	12.2	9.6	8.7	85.9	22
Greatest amount	15.7	15.2	13.3	11.1	9.8	8.1	12.2	19.5	20.7	19.6	19.2	16.4	121.8	22
Least amount	1.4	1.3	2.1	1.9	1.6	0.9	0.7	2.4	4.4	6.3	2.5	3.2	50.6	22
Maximum amount (24 hours)	3.8	2.7	3.1	2.2	3.7	2.0	2.1	4.3	8.5	3.6	4.2	2.7	8.5	22
SNOW														
Mean amount	9.7	8.4	9.2	1.3	0.1	T	0.0	0.0	0.0	0.2	2.9	10.7	42.5	22
Greatest amount	23.9	21.6	24.4	5.6	1.2	T	0.0	0.0	0.0	3.5	13.1	40.0	83.2	22
Least amount	T	T	T	T	0.0	0.0	0.0	0.0	0.0	0.0	T	T	10.4	22
Maximum amount (24 hours)	9.0	12.0	14.0	3.0	1.2	T	0.0	0.0	0.0	2.1	6.0	15.0	14.0	22
Mean number of days	17	15	16	11	2	Miss	0	0	0	2	8	16	87	17
WIND														
Percentage with gales	0.25	0.08	0.08	0.10	0.00	0.00	0.00	0.00	0.00	0.36	0.20	0.07	0.10	17
Mean wind speed (knots)	7.5	7.8	7.1	7.1	5.8	5.8	4.8	4.7	5.5	8.0	8.8	8.4	6.8	17
Direction (percentage of observations)														
North	0.9	1.0	0.7	1.0	0.8	1.0	1.2	1.0	0.7	0.6	0.9	0.8	0.9	17
North Northeast	1.4	1.0	0.8	0.5	0.3	0.3	0.6	0.5	0.8	0.5	0.7	0.6	0.7	17
Northeast	1.8	1.5	1.1	0.8	0.9	0.6	0.5	0.7	0.8	1.0	1.4	1.3	1.0	17
East Northeast	4.9	3.6	2.2	1.3	0.9	0.7	0.7	1.2	1.2	1.5	3.1	3.4	2.1	17
East	6.7	5.5	6.5	4.6	4.0	2.3	2.2	2.3	3.7	5.5	7.3	9.1	5.0	17
East Southeast	20.1	14.9	14.9	12.4	7.4	4.5	3.2	5.1	9.0	17.2	22.0	21.9	12.7	17
Southeast	20.8	24.8	23.4	20.4	13.6	9.6	5.4	9.1	17.1	27.0	26.1	23.9	18.4	17
South Southeast	5.2	5.6	5.1	6.1	4.9	2.7	2.6	4.3	5.8	7.8	6.9	6.2	5.3	17
South	2.5	2.5	2.2	2.5	2.4	2.1	3.1	2.8	3.2	3.8	2.5	2.4	2.7	17
South Southwest	1.7	2.3	2.6	3.7	5.3	5.4	5.9	5.5	5.1	3.8	2.7	2.2	3.9	17
Southwest	0.7	1.1	2.4	3.4	5.7	7.0	7.3	6.2	3.0	1.7	1.1	1.0	3.4	17
West Southwest	1.3	2.5	2.3	3.9	6.0	7.1	7.1	5.1	3.3	1.9	1.2	1.5	3.6	17
West	1.1	1.5	1.8	2.3	2.7	4.4	4.5	2.9	2.4	1.2	1.1	1.8	2.3	17
West Northwest	2.7	4.0	4.0	4.7	4.2	7.5	7.2	5.9	4.1	2.8	2.5	3.1	4.4	17
Northwest	5.2	7.2	8.0	10.2	13.8	18.7	17.4	15.0	10.8	5.7	4.0	3.3	9.9	17
North Northwest	2.4	2.7	2.4	3.1	3.9	5.0	5.4	4.5	2.7	2.2	1.9	2.4	3.2	17
Calm	20.5	18.3	19.6	19.2	23.2	21.0	25.6	27.8	26.1	15.8	14.8	15.1	20.6	17
Direction (mean speed, knots)														
North	6.9	7.1	5.9	6.6	4.9	5.3	4.8	5.1	5.2	6.1	6.3	7.7	5.9	17
North Northeast	8.1	8.1	6.3	5.9	5.4	3.8	3.9	3.7	5.2	4.4	7.6	5.2	6.1	17
Northeast	7.5	7.8	7.5	5.4	4.8	3.9	3.6	4.1	4.1	5.1	8.2	7.1	6.3	17
East Northeast	10.2	10.8	9.2	8.5	7.8	4.6	4.4	4.7	5.5	7.8	8.7	8.6	8.6	17
East	7.9	8.1	7.3	7.1	6.3	6.2	4.8	4.4	5.7	8.5	8.1	7.7	7.3	17
East Southeast	10.8	10.4	10.0	9.8	8.2	7.5	5.5	6.0	8.8	10.9	11.5	10.9	10.1	17
Southeast	10.4	11.0	10.2	10.6	9.1	9.0	7.2	7.5	8.4	10.3	11.7	11.0	10.2	17
South Southeast	8.8	9.5	9.1	9.3	9.1	8.7	6.4	7.1	7.9	10.4	10.1	10.2	9.1	17
South	9.1	8.3	7.1	7.6	6.4	6.4	5.3	5.4	7.0	10.4	10.7	10.8	7.9	17
South Southwest	10.7	9.9	7.6	8.0	7.1	6.9	6.3	6.2	8.0	10.1	11.7	11.2	8.0	17
Southwest	7.9	7.5	5.8	6.2	6.4	6.2	5.8	5.1	6.1	6.4	8.1	8.3	6.1	17
West Southwest	9.9	8.1	7.1	6.8	6.5	6.2	5.7	5.8	5.5	8.6	9.6	10.4	6.7	17
West	6.4	7.6	6.7	6.6	5.9	5.5	5.2	4.7	6.0	6.0	8.4	9.3	6.1	17
West Northwest	6.9	7.6	8.2	8.6	6.8	7.6	7.1	6.8	7.1	6.9	7.4	7.9	7.4	17
Northwest	6.6	7.6	7.7	8.3	7.6	8.3	7.8	7.6	7.6	6.9	6.9	7.4	7.7	17
North Northwest	7.5	8.2	8.5	7.4	7.1	7.7	7.1	7.8	6.9	6.3	8.1	7.3	7.5	17
VISIBILITY														
Mean number of days with fog	7	7	7	6	6	9	12	11	8	6	6	7	92	17

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

JUNEAU, AK (58°22'N, 134°35'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)	1012.1	1009.4	1010.4	1012.2	1015.3	1014.6	1016.7	1015.3	1013.2	1008.0	1007.3	1007.9	1011.9	36
TEMPERATURE (°F)														
Mean	23.9	28.2	32.7	40.0	47.4	53.5	56.3	55.3	49.7	42.2	33.1	27.7	41.0	46
Mean daily maximum	29.0	33.6	38.6	47.3	55.1	61.5	64.0	62.8	56.0	47.0	37.5	32.1	47.2	46
Mean daily minimum	18.2	22.2	26.3	32.3	39.1	45.1	48.2	47.2	43.0	36.9	28.3	22.9	34.3	46
Extreme (highest)	57	57	59	72	79	86	90	83	72	61	56	50	90	46
Extreme (lowest)	-22	-22	-15	6	25	31	36	27	23	11	-5	-21	-22	46
RELATIVE HUMIDITY														
Average percentage	81.5	80.8	78.4	76.7	75.9	76.1	79.2	82.9	87.2	86.7	84.4	84.1	81.3	36
CLOUD COVER														
Percent of time clear	16.2	14.6	16.6	11.8	10.6	7.5	7.7	11.5	9.1	7.7	8.8	12.4	11.1	36
Percent of time scattered	6.8	6.0	6.2	8.5	8.1	8.4	8.8	8.4	6.5	4.7	4.9	4.5	6.8	36
Percent of time broken	7.9	7.2	8.8	12.2	12.3	12.2	12.1	10.6	8.9	7.5	7.0	6.7	9.4	36
Percent of time overcast	65.7	69.0	64.2	62.0	62.6	65.2	66.0	64.5	70.5	75.7	75.9	72.8	67.9	36
PRECIPITATION (inches)														
Mean amount	4.1	3.7	3.3	2.7	3.5	3.0	4.1	5.1	7.1	7.7	5.6	4.7	55.1	46
Greatest amount	9.1	8.1	6.5	5.3	9.2	6.0	7.8	12.3	15.1	15.2	11.2	9.8	85.1	46
Least amount	0.9	0.0	0.5	0.8	1.4	1.0	1.1	0.5	2.3	2.7	1.1	0.4	37.7	46
Maximum amount (24 hours)	2.1	2.7	1.7	1.9	2.1	1.9	1.6	2.5	2.7	2.2	3.1	2.2	3.1	46
SNOW														
Mean amount	27.3	19.9	15.1	3.0	0.0	0.0	0.0	0.0	T	1.1	12.8	23.2	102.4	46
Greatest amount	69.2	86.3	50.6	46.3	1.2	0.0	0.0	0.0	T	15.6	69.8	54.7	212.1	46
Least amount	2.4	T	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	23.4	46
Maximum amount (24 hours)	19.6	23.5	17.7	20.5	0.6	0.0	0.0	0.0	T	8.8	17.1	19.9	23.5	46
Mean number of days	17	15	15	7	1	0	0	0	Miss	2	12	17	86	46
WIND														
Percentage with gales	0.06	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.07	0.09	0.09	0.16	0.69	36
Mean wind speed (knots)	6.6	7.2	7.0	7.4	7.1	6.7	6.5	6.5	6.9	8.1	7.6	7.7	7.1	36
Direction (percentage of observations)														
North	11.0	8.7	7.6	5.8	8.1	13.4	19.3	17.4	9.8	5.1	6.9	10.2	10.3	36
North Northeast	3.6	3.4	2.7	2.4	3.1	5.2	5.6	5.0	3.6	2.9	3.5	3.4	3.7	36
Northeast	2.6	2.2	2.1	2.0	1.7	1.6	1.8	1.9	1.7	1.7	2.0	2.2	2.0	36
East Northeast	5.2	5.7	4.3	3.8	3.2	5.0	5.6	6.7	5.8	4.7	4.5	5.5	5.0	36
East	16.0	15.8	14.7	11.3	10.7	11.6	13.7	14.6	15.9	16.8	14.6	16.9	14.4	36
East Southeast	20.0	23.2	21.4	23.9	19.8	14.9	12.0	15.1	20.8	29.6	28.3	25.0	21.2	36
Southeast	5.8	7.3	7.9	9.8	8.3	4.5	3.0	3.0	5.4	9.1	8.5	7.3	6.6	36
South Southeast	0.9	1.1	1.5	1.5	1.3	0.9	0.4	0.5	0.8	1.2	1.1	0.9	1.0	36
South	0.9	1.1	1.6	1.9	1.7	1.5	1.0	0.9	1.4	1.4	0.9	0.9	1.2	36
South Southwest	0.4	1.1	2.6	3.8	3.9	3.2	2.4	2.7	2.8	1.6	0.8	0.4	2.1	36
Southwest	0.5	1.1	3.8	5.6	6.4	6.4	4.6	4.7	4.2	2.0	0.8	0.4	3.4	36
West Southwest	0.6	1.1	2.2	3.7	5.7	5.9	4.4	3.6	2.4	1.3	0.7	0.6	2.7	36
West	0.9	1.3	1.9	2.9	4.0	4.9	3.8	2.2	1.5	1.1	1.1	0.8	2.2	36
West Northwest	0.9	1.1	1.8	1.5	2.2	2.3	2.1	1.5	1.2	1.0	1.0	0.9	1.4	36
Northwest	1.8	1.7	1.6	1.5	1.9	2.4	2.7	2.1	1.8	1.4	2.0	1.7	1.9	36
North Northwest	4.7	3.8	3.1	2.7	4.0	6.8	9.9	8.4	4.1	2.6	3.5	3.9	4.8	36
Calm	24.2	20.7	19.4	16.3	14.3	10.0	7.8	10.0	16.9	16.7	20.0	19.2	16.2	36
Direction (mean speed, knots)														
North	4.5	4.3	4.3	4.2	4.4	4.7	4.9	4.6	4.1	3.8	4.0	4.4	4.4	36
North Northeast	4.5	4.6	4.8	4.8	4.9	4.9	5.0	4.5	4.3	4.3	4.4	4.4	4.6	36
Northeast	5.0	5.1	5.6	4.7	5.0	5.4	5.8	4.9	4.8	5.0	4.7	5.4	5.1	36
East Northeast	7.7	8.2	8.2	7.2	6.9	7.5	7.8	8.1	7.6	7.4	7.3	8.1	7.7	36
East	9.5	9.1	9.2	8.3	8.2	8.0	8.6	8.7	9.0	8.9	9.1	9.4	8.9	36
East Southeast	12.7	13.2	12.8	12.3	11.8	11.5	11.0	11.4	12.6	13.1	13.2	13.5	12.6	36
Southeast	12.8	12.4	12.0	12.5	12.6	12.1	11.9	12.7	12.8	13.3	12.9	13.2	12.7	36
South Southeast	7.0	7.5	7.2	8.6	8.5	7.5	5.9	5.5	7.0	8.4	8.0	8.4	7.7	36
South	6.7	6.6	5.4	5.6	5.3	5.2	4.9	4.3	4.8	5.5	6.0	6.6	5.5	36
South Southwest	7.7	7.2	5.7	6.6	6.7	6.7	6.1	6.0	5.5	5.9	7.1	8.1	6.3	36
Southwest	6.3	6.6	6.1	7.0	7.1	7.0	6.7	6.4	5.9	5.4	5.6	7.6	6.6	36
West Southwest	5.5	5.5	5.6	6.7	7.2	7.2	6.7	6.2	5.6	5.1	5.1	5.8	6.5	36
West	4.3	4.5	4.7	5.9	6.8	6.7	6.6	5.6	4.6	4.0	4.0	4.3	5.8	36
West Northwest	4.6	4.2	4.7	5.9	6.4	6.6	6.0	5.4	4.5	4.1	4.8	4.3	5.4	36
Northwest	4.1	4.4	4.3	4.6	5.5	5.2	5.2	4.9	4.4	4.5	4.3	4.3	4.7	36
North Northwest	4.5	4.6	4.8	4.5	4.9	5.2	5.4	4.9	4.4	4.5	4.7	4.9	4.9	36
VISIBILITY														
Mean number of days with fog	9	8	7	5	5	5	9	11	13	11	10	10	103	46

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

KAKE, AK (56°58'N, 133°57'W) 30 feet (9 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	31.4	32.9	37.8	41.6	47.6	51.7	55.9	56.1	51.3	44.7	36.5	33.3	43.6	14
Mean daily maximum	36.8	38.6	44.3	49.2	55.7	59.9	63.6	64.1	58.3	50.5	41.8	37.9	50.1	14
Mean daily minimum	25.6	26.4	30.8	33.6	38.9	43.0	47.8	47.5	43.9	38.4	30.6	28.2	36.4	14
Extreme (highest)	51	58	61	67	77	81	81	82	74	61	55	49	82	14
Extreme (lowest)	-2	-6	3	10	10	16	27	26	25	10	-5	4	-6	14
PRECIPITATION (inches)														
Mean amount	5.6	4.7	3.9	2.5	2.5	2.5	2.6	3.0	5.1	8.8	6.6	5.4	53.7	15
Greatest amount	12.6	9.2	8.4	5.5	5.6	4.5	4.9	8.6	12.1	18.1	11.9	15.2	82.7	15
Least amount	1.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.3	0.0	0.2	1.3	51.1	15
Maximum amount (24 hours)	2.4	2.0	2.6	1.7	1.3	0.9	1.2	1.5	2.0	2.2	3.4	2.5	3.4	15
SNOW														
Mean amount	11.7	0.2	6.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.0	5.4	26.3	13
Greatest amount	29.3	1.9	26.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	18.0	12.7	53.7	13
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	3.5	13
Maximum amount (24 hours)	6.0	0.5	9.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	4.0	3.0	9.0	13
Mean number of days	6	5	8	1	0	0	0	0	0	0	4	3	27	8
VISIBILITY														
Mean number of days with fog	4	1	2	2	3	3	2	5	5	4	3	3	37	8

ANGOON, AK (57°30'N, 134°35'W) 10 feet (3 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	28.2	32.0	35.8	40.7	46.9	52.6	56.1	56.0	51.3	44.1	35.9	31.1	42.2	32
Mean daily maximum	32.0	36.4	40.9	47.0	53.4	59.0	62.1	61.7	56.6	48.4	39.3	34.3	47.2	32
Mean daily minimum	23.8	27.2	30.2	33.8	39.8	45.8	49.6	49.8	45.5	39.3	32.0	27.4	36.7	32
Extreme (highest)	57	57	58	66	71	80	82	77	75	66	57	50	82	32
Extreme (lowest)	-3	-7	0	20	29	36	40	40	30	16	-2	-6	-7	32
PRECIPITATION (inches)														
Mean amount	3.6	3.0	2.6	2.2	1.9	1.9	2.3	3.7	5.3	7.3	4.4	4.5	43.1	33
Greatest amount	6.9	5.3	7.1	5.2	14.3	3.1	4.3	23.5	16.8	32.1	8.5	15.5	130.7	33
Least amount	0.9	0.8	0.2	0.2	0.8	0.8	0.3	0.2	2.3	2.8	1.3	1.3	29.8	33
Maximum amount (24 hours)	2.0	2.8	3.0	2.0	4.7	0.9	2.4	5.2	4.1	4.6	2.8	4.2	5.2	33
SNOW														
Mean amount	17.4	14.0	8.3	2.1	0.0	0.0	0.0	0.0	0.0	0.4	6.8	16.1	65.1	33
Greatest amount	49.8	49.1	30.8	25.8	0.3	0.0	0.0	0.0	0.0	4.0	30.9	38.6	119.3	33
Least amount	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	30.6	33
Maximum amount (24 hours)	10.5	11.2	19.6	12.4	0.3	0.0	0.0	0.0	0.0	3.4	13.6	13.9	19.6	33
Mean number of days	18	15	14	7	Miss	0	0	0	0	1	8	15	78	22
VISIBILITY														
Mean number of days with fog	4	4	4	4	4	4	7	8	9	6	6	5	65	22

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

GUSTAVUS, AK (58°25'N, 135°44'W) 36 feet (11 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)	1011.9	1009.7	1010.4	1012.2	1015.7	1015.2	1017.3	1015.4	1012.8	1007.1	1006.9	1006.9	1011.8	16
TEMPERATURE (°F)														
Mean	26.0	29.5	33.1	40.2	46.8	52.9	55.9	55.4	49.9	42.0	33.2	29.5	41.6	30
Mean daily maximum	31.6	35.6	39.7	47.9	55.0	61.0	63.7	63.5	57.6	47.7	38.5	34.4	48.5	30
Mean daily minimum	19.8	22.9	26.0	32.1	38.1	44.4	47.8	46.8	41.7	35.8	27.4	24.2	34.3	30
Extreme (highest)	54	57	53	70	78	86	86	87	75	65	58	51	87	30
Extreme (lowest)	-20	-16	-13	10	14	25	26	28	22	10	-7	-21	-21	30
RELATIVE HUMIDITY														
Average percentage	81.9	83.2	79.3	77.4	78.1	80.8	84.4	86.0	87.9	85.7	85.2	85.4	83.0	16
CLOUD COVER														
Percent of time clear	16.6	13.7	16.8	11.7	11.3	7.0	7.1	10.4	10.0	8.3	10.4	13.0	11.3	16
Percent of time scattered	8.9	6.2	8.2	8.0	8.7	8.8	10.4	8.6	7.6	5.7	5.4	5.8	7.7	16
Percent of time broken	10.6	10.4	11.9	15.7	15.3	15.4	13.6	11.8	12.0	11.5	9.1	10.4	12.3	16
Percent of time overcast	60.5	66.9	59.8	60.2	59.5	62.8	64.5	65.2	66.2	70.1	71.6	68.1	64.7	16
PRECIPITATION (inches)														
Mean amount	4.3	3.8	2.7	2.3	2.8	2.5	3.6	4.6	6.6	8.7	6.1	5.4	53.7	30
Greatest amount	7.9	7.4	6.8	5.6	6.5	6.1	7.2	11.5	11.4	18.0	13.0	10.4	63.8	30
Least amount	0.8	0.3	0.6	0.3	0.4	0.7	1.0	0.6	2.4	2.9	1.4	1.6	33.5	30
Maximum amount (24 hours)	3.7	1.9	1.4	1.7	2.1	1.3	1.5	2.8	3.3	4.0	2.3	2.7	4.0	30
SNOW														
Mean amount	16.9	15.8	11.2	2.0	0.2	T	T	T	T	0.9	8.7	17.4	73.0	31
Greatest amount	48.0	50.0	48.0	12.5	4.2	T	T	T	T	7.0	37.3	40.1	117.3	31
Least amount	0.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	26.6	31
Maximum amount (24 hours)	12.0	22.0	13.0	7.4	4.2	T	T	T	T	7.0	11.0	12.9	22.0	31
Mean number of days	19	17	16	7	1	Miss	Miss	Miss	Miss	2	10	16	88	23
WIND														
Percentage with gales	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05	0.07	0.19	16
Mean wind speed (knots)	6.3	6.8	6.4	6.8	5.6	5.2	4.6	4.4	5.3	6.8	6.9	7.2	6.0	16
Direction (percentage of observations)														
North	10.8	8.7	6.3	5.1	2.6	1.2	1.2	2.1	3.3	6.0	8.2	8.8	5.3	16
North Northeast	4.7	3.4	2.9	2.1	0.7	0.3	0.3	0.9	0.7	1.6	2.6	3.5	2.0	16
Northeast	3.0	2.1	2.7	1.8	1.7	0.9	0.9	0.6	0.8	1.7	2.0	2.1	1.7	16
East Northeast	1.4	1.6	1.3	1.3	1.1	0.6	0.8	0.9	1.3	1.6	1.1	1.7	1.2	16
East	2.5	3.5	3.2	2.1	2.7	1.6	2.1	3.3	3.4	3.2	2.3	3.0	2.7	16
East Southeast	5.2	6.4	5.6	6.4	5.8	4.5	4.8	7.4	10.8	10.2	7.7	7.0	6.8	16
Southeast	13.6	16.6	14.7	18.6	13.2	9.3	7.8	10.4	15.0	23.6	23.2	20.5	15.5	16
South Southeast	1.9	2.6	3.0	3.1	2.6	2.1	1.9	2.1	2.4	4.1	3.0	3.1	2.6	16
South	0.6	1.9	1.8	2.6	3.1	4.4	3.6	3.4	2.5	1.6	1.0	1.1	2.3	16
South Southwest	0.6	1.5	1.9	3.0	5.3	7.8	8.1	6.0	2.4	1.6	0.8	0.7	3.3	16
Southwest	1.0	2.0	2.5	5.6	11.2	18.4	17.7	9.8	6.0	1.9	1.5	1.2	6.6	16
West Southwest	0.6	0.7	1.1	1.8	3.2	5.3	5.6	2.9	1.5	0.7	0.9	0.8	2.1	16
West	0.8	0.9	1.9	2.7	3.3	2.9	3.1	2.9	1.7	0.7	0.4	0.6	1.8	16
West Northwest	2.0	2.5	4.1	3.6	3.5	3.1	3.6	4.4	3.8	2.5	1.9	1.9	3.1	16
Northwest	14.7	14.0	17.7	13.4	10.5	9.1	7.1	10.0	11.7	12.5	14.1	15.5	12.5	16
North Northwest	15.2	13.1	9.5	7.6	4.9	2.5	2.8	4.0	6.4	8.9	11.4	12.4	8.2	16
Calm	21.5	18.5	19.9	19.6	24.7	25.9	28.6	29.1	26.1	17.5	17.9	16.1	22.2	16
Direction (mean speed, knots)														
North	7.4	7.1	7.5	7.4	6.1	4.4	3.7	4.6	5.0	5.7	6.5	6.9	6.6	16
North Northeast	7.7	7.8	7.4	7.7	6.5	5.4	4.5	4.4	5.2	6.0	6.5	7.8	7.1	16
Northeast	6.0	5.7	6.6	6.1	5.5	4.2	4.1	3.8	3.9	5.7	4.5	5.1	5.4	16
East Northeast	5.2	5.7	7.1	6.7	4.6	4.4	4.5	4.3	4.2	5.9	5.3	5.4	5.4	16
East	7.6	7.9	6.4	6.9	6.4	5.8	4.9	5.4	5.5	6.6	6.6	7.1	6.5	16
East Southeast	10.2	9.7	9.9	10.0	7.9	7.4	7.2	7.5	8.2	9.0	10.2	10.7	9.0	16
Southeast	12.9	12.0	11.1	11.6	10.0	8.4	8.0	8.4	10.4	11.6	12.2	12.1	11.1	16
South Southeast	9.8	8.9	8.8	9.1	7.9	7.6	6.0	6.2	8.9	9.8	9.5	9.6	8.7	16
South	7.3	7.5	6.9	6.5	6.1	5.9	5.2	5.3	5.5	6.9	7.0	7.0	6.1	16
South Southwest	7.7	9.2	7.3	7.5	7.6	6.9	6.8	6.4	6.9	7.0	8.3	8.6	7.1	16
Southwest	8.6	9.5	8.0	7.9	7.0	7.4	7.2	6.6	6.4	7.0	7.4	9.8	7.3	16
West Southwest	8.6	6.9	6.1	6.8	7.3	6.7	6.9	6.5	6.5	6.3	6.1	7.5	6.8	16
West	4.6	5.7	5.6	6.1	5.7	5.4	5.0	5.0	4.6	4.8	4.4	4.7	5.3	16
West Northwest	5.1	6.5	6.7	6.8	6.6	6.5	5.5	4.9	5.5	5.4	5.5	5.7	5.9	16
Northwest	6.0	6.3	6.9	7.2	7.2	7.0	5.8	5.7	6.0	6.7	6.0	6.7	6.5	16
North Northwest	6.4	7.1	6.5	6.5	6.2	5.9	5.3	4.9	5.8	5.9	6.2	6.7	6.3	16
VISIBILITY														
Mean number of days with fog	11	10	9	5	7	6	12	13	10	8	9	10	110	23

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 VANCOUVER ISLAND, BC Between 50°N to 53°N and 127°W to 134°W													
WEATHER ELEMENTS	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANNUAL**
Wind > 33 knots [1]	9.1	6.2	4.3	3.0	1.6	0.8	0.5	0.6	1.3	3.8	6.6	7.2	3.5
Wave Height > 9 feet [1]	28.1	31.2	25.1	26.9	8.0	8.7	3.0	3.5	10.8	35.8	39.1	48.6	22.4
Visibility < 2 nautical miles [1]	11.1	9.8	7.2	5.8	6.9	6.8	8.2	9.4	10.5	10.3	7.4	8.9	8.5
Precipitation [1]	25.7	24.1	21.4	19.0	15.8	15.4	12.8	11.7	14.3	21.3	25.6	25.2	18.9
Temperature > 69° F	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.5	0.2	0.0	0.0	0.0	0.1
Mean Temperature (°F)	44.5	43.9	44.2	46.4	49.7	53.3	57.0	58.3	57.5	52.9	47.7	44.9	50.4
Temperature < 33° F [1]	2.2	1.7	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.0	0.5
Mean RH (%)	84.0	83.0	82.0	82.0	82.0	83.0	85.0	86.0	85.0	84.0	82.0	83.0	84.0
Overcast or Obscured [1]	56.6	52.3	46.1	42.4	46.0	50.9	51.7	45.3	40.5	43.7	47.3	51.2	47.6
Mean Cloud Cover (8^{ths})	6.6	6.4	6.1	5.9	6.2	6.4	6.4	6.0	5.6	6.1	6.3	6.4	6.2
Mean SLP (mbs)	1010	1012	1011	1014	1017	1017	1019	1017	1016	1013	1009	1009	1014
Ext. Max. SLP (mbs)	1057	1051	1040	1045	1046	1041	1035	1036	1038	1050	1040	1048	1057
Ext. Min. SLP (mbs)	956	959	955	962	984	979	983	983	972	951	954	956	951
Prevailing Wind Direction	SE	S	SE	S	NW	NW	NW	NW	NW	S	SE	SE	NW
Thunder and Lightning [1]	0.3	0.3	0.3	0.3	0.1	0.1	0.0	0.1	0.2	0.2	0.5	0.3	0.2

COASTAL AREA OFF QUEEN CHARLOTTE, BC Between 53°N to 56°N and 128°W to 135°W													
WEATHER ELEMENTS	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANNUAL**
Wind > 33 knots [1]	5.3	3.0	2.5	1.6	1.1	0.4	0.2	0.4	1.1	3.1	4.1	3.8	2.0
Wave Height > 9 feet [1]	16.3	17.2	17.7	18.5	5.1	3.9	1.0	0.8	3.5	28.2	15.9	19.7	11.9
Visibility < 2 nautical miles [1]	10.4	9.2	7.1	5.2	7.8	8.5	12.4	14.2	12.8	12.4	10.0	9.2	10.2
Precipitation [1]	33.3	29.8	23.5	24.8	21.9	17.8	16.8	19.6	22.9	30.5	32.5	29.4	24.2
Temperature > 69° F	0.0	0.0	0.0	0.0	0.2	0.6	1.3	0.5	0.1	0.0	0.0	0.0	0.3
Mean Temperature (°F)	40.3	40.2	41.0	45.1	49.5	53.0	56.5	56.8	55.8	50.0	43.9	39.9	48.8
Temperature < 33° F [1]	11.0	9.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.8	10.9	2.6
Mean RH (%)	86.0	84.0	82.0	81.0	83.0	84.0	86.0	86.0	86.0	85.0	84.0	85.0	85.0
Overcast or Obscured [1]	56.0	54.7	44.8	42.6	44.1	44.1	49.8	41.3	43.2	44.8	52.1	51.2	46.8
Mean Cloud Cover (8^{ths})	6.3	6.4	6.0	5.9	6.1	6.2	6.4	5.9	5.9	6.3	6.5	6.2	6.2
Mean SLP (mbs)	1009	1013	1010	1013	1017	1017	1018	1015	1015	1010	1007	1008	1013
Ext. Max. SLP (mbs)	1047	1044	1041	1036	1040	1036	1039	1033	1036	1037	1051	1047	1051
Ext. Min. SLP (mbs)	969	968	965	978	977	984	986	988	974	968	964	959	959
Prevailing Wind Direction	SE	SE	SE	SE	NW	SE	NW	NW	SE	SE	SE	SE	SE
Thunder and Lightning [1]	0.3	0.3	0.5	0.3	0.1	0.1	0.2	0.2	0.3	0.2	0.7	0.2	0.3

COASTAL AREA OFF SITKA, AK Between 56°N to 60°N and 131°W to 140°W													
WEATHER ELEMENTS	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANNUAL**
Wind > 33 knots [1]	8.9	7.6	5.4	2.9	1.1	0.4	0.3	0.7	2.1	4.6	7.1	9.1	3.5
Wave Height > 9 feet [1]	14.0	10.0	7.9	4.2	2.8	1.8	1.0	1.8	3.5	7.1	8.3	13.2	5.4
Visibility < 2 nautical miles [1]	8.8	8.3	7.7	2.8	2.8	6.3	7.7	8.3	6.8	6.4	5.7	6.8	6.4
Precipitation [1]	26.4	20.3	22.6	21.0	18.8	19.8	18.4	18.3	20.8	28.9	28.5	25.6	22.1
Temperature > 69° F	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.2	0.0	0.1	0.0	0.1
Mean Temperature (°F)	37.9	38.3	39.1	42.5	46.8	51.3	54.9	56.0	53.2	46.9	40.7	39.7	47.0
Temperature < 33° F [1]	15.7	14.3	7.6	0.5	0.0	0.1	0.0	0.0	0.0	0.3	9.9	7.9	3.5
Mean RH (%)	85.0	84.0	82.0	82.0	83.0	84.0	85.0	86.0	85.0	84.0	83.0	84.0	84.0
Overcast or Obscured [1]	54.4	51.8	48.7	49.6	52.0	56.1	59.1	51.9	48.2	57.9	50.9	56.2	53.2
Mean Cloud Cover (8^{ths})	6.3	6.2	6.0	6.1	6.3	6.6	6.7	6.2	6.0	6.6	6.3	6.5	6.3
Mean SLP (mbs)	1010	1008	1010	1012	1015	1015	1017	1016	1013	1007	1007	1006	1012
Ext. Max. SLP (mbs)	1050	1047	1045	1050	1043	1036	1040	1040	1039	1034	1041	1046	1050
Ext. Min. SLP (mbs)	962	961	959	968	973	976	994	987	967	953	958	955	953
Prevailing Wind Direction	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Thunder and Lightning [1]	0.8	0.2	0.7	0.1	0.6	0.2	0.2	0.1	0.5	0.4	0.7	0.3	0.4

[1] Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

Atmospheric Pressure Conversion Table

Inches	Millibars	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
29.15	987	30.03	1017	30.92	1047
29.24	990	30.12	1020	31.01	1050

Mean Surface Water Temperatures and Densities

		Ketchikan 55°20'N., 131°38'W.	Sitka 57°03'N., 135°20'W.	Juneau 58°18'N., 134°25'W.	Skagway 59°27'N., 135°19'W.	Yakutat 59°33'N., 139°44'W.	Cordova 60°33'N., 145°46'W.	Seward 60°06'N., 149°27'W.	Womens Bay 57°43'N., 152°31'W.	Anchorage 61°15'N., 149°53'W.	Massacre Bay 52°48'N., 173°10'W.	Unalaska 53°53'N., 166°32'W.	Sweeper Cove 51°51'N., 176°39'W.
Years of Record		44	24	29	22	26	14	35	17	9	15	12	23
Jan	Temp (°C)	5.2	4.5	2.2	2.5	3.8	2.9	3.4	0.7	-0.9	2.3	2.5	2.8
	Density	21.0	22.1	21.2	23.2	22.3	23.3	22.2	21.1	14.3	24.3	21.5	23.2
Feb	Temp (°C)	5.1	4.2	2.1	2.2	3.5	2.7	3.1	0.9	-0.9	2.1	2.0	2.6
	Density	21.6	22.4	21.8	23.3	22.4	23.3	22.1	21.6	16.2	24.4	21.7	22.9
Mar	Temp (°C)	5.4	4.4	2.8	2.3	3.8	2.6	3.2	1.5	-0.4	2.2	2.4	3.1
	Density	21.8	22.2	21.9	23.2	22.4	23.4	22.1	22.5	16.6	24.6	22.2	22.5
Apr	Temp (°C)	6.4	5.9	4.5	3.4	5.3	4.0	4.5	3.6	0.9	3.2	3.6	3.5
	Density	21.7	21.8	20.9	23.0	22.0	23.3	21.3	22.4	16.3	24.3	21.5	22.1
May	Temp (°C)	8.9	8.8	7.6	6.7	7.7	6.0	7.3	6.4	6.1	4.6	5.2	4.6
	Density	20.6	20.0	15.2	17.9	21.2	22.8	16.5	19.0	15.4	23.5	20.2	22.4
Jun	Temp (°C)	12.2	11.3	10.3	9.9	10.8	8.3	10.5	8.7	11.4	6.5	7.3	6.2
	Density	19.1	18.8	10.7	8.0	19.7	21.7	9.8	16.1	11.4	23.0	19.9	23.2
Jul	Temp (°C)	13.8	13.4	11.0	10.6	12.8	10.2	12.2	11.3	14.2	8.3	8.9	7.2
	Density	18.5	18.5	9.3	3.5	17.6	20.5	6.5	17.0	6.2	22.8	21.1	23.5
Aug	Temp (°C)	14.0	13.9	10.6	10.2	12.9	11.2	12.2	11.7	13.6	9.5	9.5	7.6
	Density	18.3	19.0	10.0	3.4	17.7	19.4	9.2	20.2	4.9	23.2	22.0	23.7
Sep	Temp (°C)	12.0	12.1	9.1	8.8	11.4	10.0	10.7	10.0	11.2	8.8	8.3	7.4
	Density	18.7	19.1	11.7	9.1	19.1	19.8	13.3	19.8	5.9	23.8	21.1	23.4
Oct	Temp (°C)	9.5	9.3	6.6	6.5	9.0	7.8	8.1	6.9	5.9	6.8	6.1	5.9
	Density	18.5	19.9	14.4	16.2	20.6	21.0	17.5	20.9	7.8	23.9	20.8	23.4
Nov	Temp (°C)	7.2	7.1	4.6	4.4	6.7	6.2	5.9	4.0	0.8	4.4	4.5	4.6
	Density	18.5	21.0	18.0	20.3	21.5	22.5	19.9	20.7	9.9	23.6	21.5	23.4
Dec	Temp (°C)	5.8	5.6	3.2	3.3	4.9	4.7	4.5	1.8	-0.6	2.7	3.1	3.4
	Density	19.9	21.6	20.4	22.4	22.1	22.8	21.5	21.6	12.3	24.3	21.6	23.4
Mean	Temp (°C)	8.8	8.4	6.2	5.9	7.7	6.4	7.1	5.6	5.1	5.1	5.3	4.9
	Density	19.8	20.5	16.3	16.1	20.7	22.0	16.8	20.2	11.4	23.9	21.2	23.1

F (Fahrenheit) = 1.8C (Celsius) + 32

Density as used in this table is the specific gravity of the sea water or the ratio between the weight of a sea-water sample and the weight of an equal volume of distilled water at 15°C (59°F).

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

Pacific Coast Distances
(nautical miles)

	Midway Island	Port Allen, HI	Nawiliwili, HI	Pearl Harbor, HI	Honolulu, HI	Kahalui, HI	Kawaihae, HI	Hilo, HI	Kuluk Bay, AK	Unimak Pass, AK	Kodiak, AK	Anchorage, AK	Seward, AK	Port Valdez, AK	Cape Spencer, AK	Sitka, AK	Ketchikan, AK	Seattle, WA	Swiftsure Bank, WA	Cape Flattery, WA	Portland, OR	Astoria, OR	San Francisco, CA	Los Angeles, CA	Long Beach, CA	San Diego, CA
Panama Canal 8°53.0'N., 79°31.0'W.	5707	4777	4767	4690	4685	4609	4594	4527	5604	5228	4924	5117	4940	4984	4603	4538	4387	4044	-	3920	3888	3803	3270	2939	2939	2867
San Diego, CA 32°43.0'N., 117°10.5'W.	3097	2347	2330	2283	2278	2212	2219	2175	2806	2412	2115	2303	2124	2174	1787	1723	1575	1228	-	1104	1074	989	455	95	94	-
Long Beach, CA 33°46.2'N., 118°13.3'W.	3034	2302	2284	2241	2236	2173	2183	2143	2725	2331	2034	2223	2043	2092	1707	1643	1497	1148	-	1024	992	908	374	3	-	
Los Angeles, CA 33°45.0'N., 118°16.2'W.	3031	2299	2281	2238	2233	2170	2180	2140	2722	2328	2031	2220	2040	2089	1703	1639	1493	1144	-	1020	989	904	371	-		
San Francisco, CA 37°48.5'N., 122°24.0'W.	2792	2146	2128	2096	2091	2036	2051	2019	2403	1990	1693	1882	1702	1745	1366	1302	1156	807	-	683	652	567	-			
Astoria, OR 46°11.7'N., 123°50.0'W.	2724	2281	2262	2251	2246	2207	2235	2214	2071	1626	1261	1435	1242	1239	883	815	660	278	-	153	85	-				
Portland, OR 45°33.0'N., 122°41.7'W.	2809	2366	2347	2336	2331	2292	2320	2299	2156	1711	1346	1520	1327	1324	968	900	745	362	-	238	-					
Cape Flattery, WA 48°26.0'N., 124°47.0'W.	2694	2308	2289	2290	2285	2245	2276	2260	-	-	-	-	-	-	-	-	-	124	10	-						
Swiftsure Bank, WA 48°31.0'N., 125°00.0'W.	-	-	-	-	-	-	-	-	1973	1510	1124	1294	1100	1100	739	681	518	134	-							
Seattle, WA 47°36.2'N., 122°20.3'W.	2818	2432	2413	2414	2409	2369	2400	2384	2107	1644	1258	1428	1234	1234	976*	815	659*	-								
Ketchikan, AK 55°20.5'N., 131°38.7'W.	2570	2387	2368	2388	2383	2361	2405	2398	1656	1193	742	892	682	713	307	224	-									
Sitka, AK 57°03.1'N., 135°20.5'W.	2481	2380	2361	2390	2385	2365	2412	2410	1490	1027	564	708	464	479	85	-										
Cape Spencer, AK 58°10.0'N., 136°38.3'W.	2472	2407	2388	2416	2411	2398	2445	2447	1450	987	505	641	422	400	-											
Port Valdez 61°06.0'N., 146°24.0'W.	2386	2445	2429	2473	2468	2463	2513	2524	1224	761	280	385	144	-												
Seward, AK 60°06.0'N., 149°26.0'W.	2250	2351	2332	2378	2373	2377	2432	2439	1115	652	175	274	-													
Anchorage, AK 61°14.2'N., 149°53.3'W.	2305	2459	2440	2482	2477	2479	2535	2542	1151	688	242	-														
Kodiak, AK 57°47.1'N., 152°25.1'W.	2088	2203	2184	2235	2230	2233	2289	2296	968	505	-															
Unimak Pass, AK 54°20.0'N., 164°45.0'W.	1680	1972	1963	2024	2028	2044	2110	2126	463	-																
Kuluk Bay, AK 51°51.6'N., 176°37.6'W.	1460	1990	1989	2057	2061	2099	2164	2198	-																	
Hilo, HI 19°44.1'N., 155°03.5'W.	1338	297	287	201	196	121	83	-																		
Kawaihae, HI 20°02.3'N., 155°49.9'W.	1278	240	230	145	140	85	-																			
Kahalui, HI 20°54.0'N., 156°28.2'W.	1232	193	181	94	89	-																				
Honolulu, HI 21°18.5'N., 157°52.3'W.	1150	106	96	9	-																					
Pearl Harbor, HI 21°20.0'N., 157°58.3'W.	1146	102	92	-																						
Nawiliwili, HI 21°57.4'N., 159°21.5'W.	1069	21	-																							
Port Allen, HI 24°51.1'N., 159°35.6'W.	1042	-																								
Midway Island 28°13.0'N., 177°22.0'W.	-																									

* via inside passage

Gulf of Alaska Distances
(nautical miles)

	Unimak Pass	False Pass	Unga	Chignik	Uyak	Kodiak	Anchorage	Homer	Seldova	Seward	Latouche	Whittier	Port Valdez	Cordova	Yakutat	Cape Spencer	Sitka	Cape Decision	Dixon Entrance	Swiftsure Bank
Swiftsure Bank 48°31.0'N., 125°00.0'W.	1510	1473	1394	1301	1200	1124	1294	1178	1167	1100	1076	1113	1100	1093	869	739	681	588	500	-
Dixon Entrance 54°28.0'N., 132°52.0'W.	1120	1064	953	874	762	687	845	729	718	642	617	647	634	627	402	259	192	106	-	
Cape Decision 55°59.4'N., 134°08.1'W.	1064	1016	892	811	689	613	763	647	636	553	527	542	529	522	295	162	95	-		
Sitka 57°03.1'N., 135°20.5'W.	1027	980	865	772	628	564	708	591	580	494	467	492	479	472	231	85	-			
Cape Spencer 58°10.0'N., 136°38.3'W.	987	926	811	717	571	505	641	525	514	422	395	413	400	393	141	-				
Yakutat 59°32.9'N., 139°43.9'W.	897	844	730	636	480	414	538	422	411	312	286	298	285	278	-					
Cordova 60°33.4'N., 145°45.3'W.	763	711	597	503	339	282	387	270	260	146	85	96	78	-						
Port Valdez 61°06.0'N., 146°24.0'W.	761	709	595	501	337	280	385	267	257	144	83	96	-							
Whittier 60°46.8'N., 148°39.6'W.	742	689	574	481	317	261	367	249	239	125	64	-								
Latouche 60°03.3'N., 147°54.1'W.	678	626	511	418	254	201	300	183	172	61	-									
Seward 60°06.0'N., 149°26.0'W.	652	600	485	392	228	175	274	158	147	-										
Seldova 59°26.5'N., 151°43.0'W.	562	510	395	302	138	115	139	16	-											
Homer 59°36.0'N., 151°24.0'W.	573	521	406	313	149	126	143	-												
Anchorage 61°14.2'N., 149°53.3'W.	688	636	521	428	264	242	-													
Kodiak 57°47.1'N., 152°25.1'W.	505	453	338	245	80	-														
Uyak 57°38.6'N., 154°00.0'W.	440	388	273	180	-															
Chignik 56°17.8'N., 158°24.0'W.	289	236	122	-																
Unga 55°10.6'N., 160°29.8'W.	187	135	-																	
False Pass 54°51.4'N., 163°24.0'W.	86	-																		
Unimak Pass 54°20.0'N., 164°45.0'W.	-																			

Inside Passage Distances

Seattle, Washington to Cape Spencer, Alaska
(nautical miles)

	Cape Spencer, AK	Gustavus, AK	Skagway, AK	Haines, AK	Juneau, AK	Pelican, AK	Sitka, AK	Petersburg, AK	Port Alexander, AK	Cape Decision, AK	Wrangell, AK	Craig, AK	Ketchikan, AK	Metlakatla, AK	Cape Chacon, AK	Hyder, AK	Dixon Entrance, BC	Victoria, BC	Seattle, WA
Seattle, WA 47°36.2'N., 122°20.3'W.	976	938	962	950	879	989	883	771	812	788	749	716	659	660	640	690	664	72	-
Victoria, BC 48°25.0'N., 123°28.5'W.	924	886	910	898	827	937	832	719	761	737	697	664	608	608	588	638	612	-	
Dixon Entrance, BC 54°28.0'N., 132°52.0'W.	319	290	371	359	288	332	221	180	150	126	157	77	79	66	34	169	-		
Hyder, AK 55°54.2'N., 130°00.6'W.	451	423	447	435	364	464	368	256	297	273	234	212	144	148	136	-			
Cape Chacon, AK 54°40.6'N., 131°59.7'W.	318	289	337	325	254	331	220	146	149	125	123	76	45	32	-				
Metlakatla, AK 55°07.8'N., 131°34.2'W.	321	293	317	305	235	334	238	126	167	143	104	109	16	-					
Ketchikan, AK 55°20.5'N., 131°38.7'W.	307	278	303	291	220	320	224	112	153	129	89	121	-						
Craig, AK 55°28.7'N., 133°09.7'W.	242	213	264	253	206	255	144	113	73	49	111	-							
Wrangell, AK 56°28.2'N., 132°23.2'W.	235	208	231	219	148	248	170	40	99	75	-								
Cape Decision, AK 55°59.4'N., 134°08.1'W.	193	164	215	204	157	206	95	76	24	-									
Port Alexander, AK 56°14.8'N., 134°38.8'W.	173	147	198	186	140	186	82	100	-										
Petersburg, AK 56°48.9'N., 132°57.8'W.	195	166	191	179	108	207	159	-											
Sitka, AK 57°03.1'N., 135°20.5'W.	85	136	187	176	162	79	-												
Pelican, AK 57°57.6'N., 136°13.8'W.	18	45	148	136	123	-													
Juneau, AK 58°17.9'N., 134°24.7'W.	110	82	100	88	-														
Haines, AK 59°13.8'N., 135°26.1'W.	124	96	14	-															
Skagway, AK 59°26.8'N., 135°19.3'W.	136	106	-																
Gustavus, AK 58°23.3'N., 135°43.6'W.	32	-																	
Cape Spencer, AK 58°10.0'N., 136°38.3'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	

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)

Tips for Boating Clean and 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 the EPA National Response Center at 800–424–8802.

• 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.

• 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 800–CLEAN–UP or visit http://www.earth911.org