PUB. 120

SAILING DIRECTIONS (PLANNING GUIDE)

★

PACIFIC OCEAN AND SOUTHEAST ASIA

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This publication has been corrected to 8 April 2006, including Notice to Mariners No. 14 of 2006.

Explanatory Remarks

Sailing Directions are published by the National Geospatial-Intelligence Agency (NGA) under the authority of Department of Defense Directive 5105.40, dated 12 December 1988, and pursuant to the authority contained in U. S. Code Title 10, Sections 2791 and 2792 and Title 44, Section 1336. Sailing Directions, covering the harbors, coasts, and waters of the world, provide information that cannot be shown graphically on nautical charts and is not readily available elsewhere.

Sailing Directions (Planning Guide) are intended to assist mariners in planning ocean passages and to eliminate duplication by consolidating useful information about all the countries adjacent to a particular ocean basin in one volume.

Planning Guide publications are compiled and structured in the alphabetical order of countries contained within the region covered by each publication.

Bearings.—Bearings are true, and are expressed in degrees from 000° (north) to 360°, measured clockwise. General bearings are expressed by the initial letters of the points of the compass (e.g. N, NNE, NE, etc.). Adjective and adverb endings have been discarded. Wherever precise bearings are intended, degrees are used.

Corrective Information.—Corrective information and other comments about this publication can be forwarded to NGA, as follows:

1. Mailing address—
   Maritime Division
   ST D 44
   National Geospatial-Intelligence Agency
   4600 Sangamore Road
   Bethesda MD 20816-5003
2. E-mail address—
   sdpubs@nga.mil

New editions of Sailing Directions are corrected through the date of publication shown above. Important information to amend material in the publication is available as a Publication Digital Update (PDU) from the NGA Maritime Division website.

NGA Maritime Division Website
http://www.nga.mil/portal/site/maritime

Courses.—Courses are true, and are expressed in the same manner as bearings. The directives “steer” and “make good” a course mean, without exception, to proceed from a point of origin along a track having the identical meridional angle as the designated course. Vessels following the directives must allow for every influence tending to cause deviation from such track, and navigate so that the designated course is continuously being made good.

Currents.—Current directions are the true directions toward which currents set.

Distances.—Distances are expressed in nautical miles of 1 minute of latitude. Distances of less than 1 mile are expressed in meters, or tenths of miles.

Geographic Names.—Geographic names are generally those used by the nation having sovereignty. Names in parentheses following another name are alternate names that may appear on some charts. In general, alternate names are quoted only in the principal description of the place. Diacritical marks, such as accents, cedillas, and circumflexes, which are related to specific letters in certain foreign languages, are not used in the interest of typographical simplicity.

Geographic names or their spellings do not necessarily reflect recognition of the political status of an area by the United States Government.

Heights.—Heights are referred to the plane of reference used for that purpose on the charts and are expressed in meters.

Internet Links.—This publication provides Internet links to web sites concerned with maritime navigational safety, including but not limited to, Federal government sites, foreign Hydrographic Offices, and foreign public/private port facilities. NGA makes no claims, promises, or guarantees concerning the accuracy, completeness, or adequacy of the contents of these web sites and expressly disclaims any liability for errors and omissions in the contents of these web sites.

International Ship and Port Facility Security (ISPS) Code.—The ISPS Code is a comprehensive set of measures to enhance the security of ships and port facilities developed in response to the perceived threats to ships and port facilities in the wake of the 9/11 attacks in the United States. Information on the ISPS Code can be found at the International Maritime Organization web site:

International Maritime Organization Home Page
http://www.imo.org

Lights and Fog Signals.—Lights and fog signals are not described, and light sectors are not usually defined. The Light Lists should be consulted for complete information.

National Ocean Claims.—Information on national ocean claims and maritime boudary disputes, which have been compiled from the best available sources, is provided solely in the interest of the navigational safety of shipping and in no way constitutes legal recognition by the United States. These non-recognized claims and requirements may include, but are not limited to:

1. A requirement by a state for advance permission or notification for innocent passage of warships in the territorial sea.
2. Straight baseline, internal waters, or historic waters claims.
3. The establishment of a security zone, where a state claims to control activity beyond its territorial sea for security reasons unrelated to that state’s police powers in its territory, including its territorial sea.

Radio Navigational Aids.—Radio navigational aids and radio weather services are not described in detail. Publication No. 117 Radio Navigational Aids and NOAA Publication, Selected Worldwide Marine Weather Broadcasts, should be consulted.

Soundings.—Soundings are referred to the datum of the charts and are expressed in meters.

Special Warnings.—Special Warnings may be in force for the geographic area covered by this publication. Special Warnings are printed in the weekly Notice to Mariners upon promulgation and are reprinted annually in Notice to Mariners No. 1. A listing of Special Warnings currently in force is printed in each weekly Notice to Mariners, Section III, Broadcast Warnings, along with the notice number of promulgation. Special Warnings are also available on the Maritime Division website.

Time Zone.—The Time Zone description(s), as well as information concerning the use of Daylight Savings Time, are included. The World Time Zone Chart is available on the Internet at the website given below.

World Time Zone Chart
http://www.odci.gov/cia/publications/factbook/reference_maps/pdf/time_zones.pdf

Winds.—Wind directions are the true directions from which winds blow.

Reference List

The principal sources examined in the preparation of this publication were:

British Hydrographic Office Sailing Directions.
Canadian Sailing Directions.
French Sailing Directions.
Japanese Sailing Directions.
Korean Sailing Directions.
Russian Sailing Directions.
Fairplay Ports and Terminals, 2003-2004.
The Statesman's Yearbook, 2005.
The World Factbook, 2004.

Reports from United States Naval and merchant vessels and various shipping companies.

Other U.S. Government publications, reports, and documents.

Charts, light lists, tide and current tables, and other documents in possession of the Agency.

Internet Web sites, as follows:

1. Calendar of All Legal Public Holidays.
   http://www.bank-holidays.com
2. Department of State/U.S. Embassies.
   http://usembassy.state.gov
3. IMB Piracy Reporting Center Home Page.
   http://www.iccwbo.org/ccs/menu_imb_piracy.asp
4. World Factbook.
   http://www.odci.gov/cia/publications/factbook

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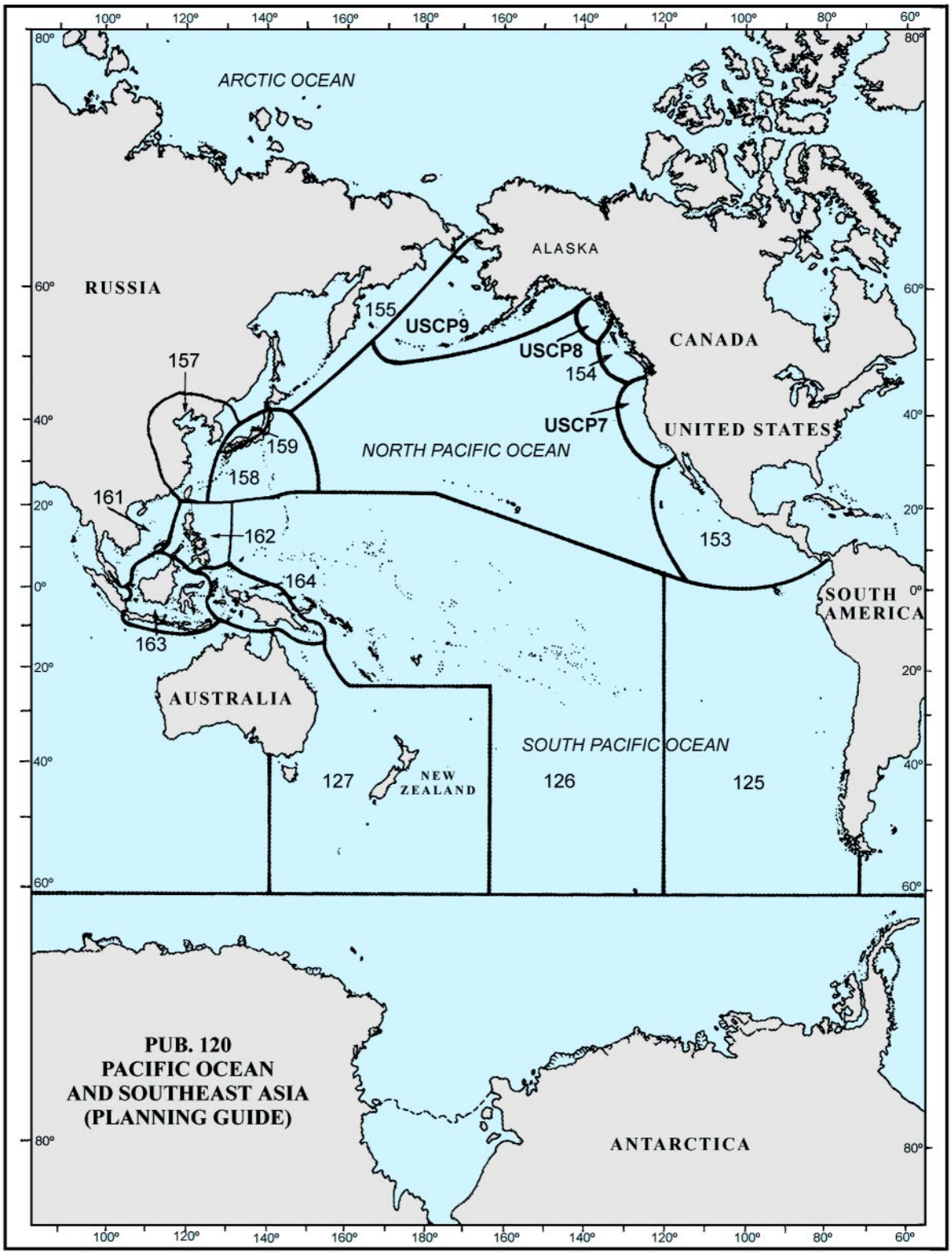
COUNTRIES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ALASKA
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Feet to Meters

Feet	0	1	2	3	4	5	6	7	8	9
0	0.00	0.30	0.61	0.91	1.22	1.52	1.83	2.13	2.44	2.74
10	3.05	3.35	3.66	3.96	4.27	4.57	4.88	5.18	5.49	5.79
20	6.10	6.40	6.71	7.01	7.32	7.62	7.92	8.23	8.53	8.84
30	9.14	9.45	9.75	10.06	10.36	10.67	10.97	11.28	11.58	11.89
40	12.19	12.50	12.80	13.11	13.41	13.72	14.02	14.33	14.63	14.93
50	15.24	15.54	15.85	16.15	16.46	16.76	17.07	17.37	17.68	17.98
60	18.29	18.59	18.90	19.20	19.51	19.81	20.12	20.42	20.73	21.03
70	21.34	21.64	21.95	22.25	22.55	22.86	23.16	23.47	23.77	24.08
80	24.38	24.69	24.99	25.30	25.60	25.91	26.21	26.52	26.82	27.13
90	27.43	27.74	28.04	28.35	28.65	28.96	29.26	29.57	29.87	30.17

Fathoms to Meters

Fathoms	0	1	2	3	4	5	6	7	8	9
0	0.00	1.83	3.66	5.49	7.32	9.14	10.97	12.80	14.63	16.46
10	18.29	20.12	21.95	23.77	25.60	27.43	29.26	31.09	32.92	34.75
20	36.58	38.40	40.23	42.06	43.89	45.72	47.55	49.38	51.21	53.03
30	54.86	56.69	58.52	60.35	62.18	64.01	65.84	67.67	69.49	71.32
40	73.15	74.98	76.81	78.64	80.47	82.30	84.12	85.95	87.78	89.61
50	91.44	93.27	95.10	96.93	98.75	100.58	102.41	104.24	106.07	107.90
60	109.73	111.56	113.39	115.21	117.04	118.87	120.70	122.53	124.36	126.19
70	128.02	129.85	131.67	133.50	135.33	137.16	138.99	140.82	142.65	144.47
80	146.30	148.13	149.96	151.79	153.62	155.45	157.28	159.11	160.93	162.76
90	164.59	166.42	168.25	170.08	171.91	173.74	175.56	177.39	179.22	181.05

Meters to Feet

Meters	0	1	2	3	4	5	6	7	8	9
0	0.00	3.28	6.56	9.84	13.12	16.40	19.68	22.97	26.25	29.53
10	32.81	36.09	39.37	42.65	45.93	49.21	52.49	55.77	59.06	62.34
20	65.62	68.90	72.18	75.46	78.74	82.02	85.30	88.58	91.86	95.14
30	98.42	101.71	104.99	108.27	111.55	114.83	118.11	121.39	124.67	127.95
40	131.23	134.51	137.80	141.08	144.36	147.64	150.92	154.20	157.48	160.76
50	164.04	167.32	170.60	173.88	177.16	180.45	183.73	187.01	190.29	193.57
60	196.85	200.13	203.41	206.69	209.97	213.25	216.54	219.82	223.10	226.38
70	229.66	232.94	236.22	239.50	242.78	246.06	249.34	252.62	255.90	259.19
80	262.47	265.75	269.03	272.31	275.59	278.87	282.15	285.43	288.71	291.99
90	295.28	298.56	301.84	305.12	308.40	311.68	314.96	318.24	321.52	324.80

Meters to Fathoms

Meters	0	1	2	3	4	5	6	7	8	9
0	0.00	0.55	1.09	1.64	2.19	2.73	3.28	3.83	4.37	4.92
10	5.47	6.01	6.56	7.11	7.66	8.20	8.75	9.30	9.84	10.39
20	10.94	11.48	12.03	12.58	13.12	13.67	14.22	14.76	15.31	15.86
30	16.40	16.95	17.50	18.04	18.59	19.14	19.68	20.23	20.78	21.33
40	21.87	22.42	22.97	23.51	24.06	24.61	25.15	25.70	26.25	26.79
50	27.34	27.89	28.43	28.98	29.53	30.07	30.62	31.17	31.71	32.26
60	32.81	33.36	33.90	34.45	35.00	35.54	36.09	36.64	37.18	37.73
70	38.28	38.82	39.37	39.92	40.46	41.01	41.56	42.10	42.65	43.20
80	43.74	44.29	44.84	45.38	45.93	46.48	47.03	47.57	48.12	48.67
90	49.21	49.76	50.31	50.85	51.40	51.95	52.49	53.04	53.59	54.13

The following abbreviations may be used in the text:

Units

˚C	degree(s) Centigrade	km	kilometer(s)
cm	centimeter(s)	m	meter(s)
cu.m.	cubic meter(s)	mb	millibars
dwt	deadweight tons	MHz	megahertz
FEU	forty-foot equivalent units	mm	millimeter(s)
grt	gross registered tons	nrt	net registered tons
kHz	kilohertz	TEU	twenty-foot equivalent units

Directions

N	north	S	south
NNE	northnortheast	SSW	southsouthwest
NE	northeast	SW	southwest
ENE	eastnortheast	WSW	westsouthwest
E	east	W	west
ESE	eastsoutheast	WNW	westnorthwest
SE	southeast	NW	northwest
SSE	southsoutheast	NNW	northnorthwest

Vessel types

LASH	Lighter Aboard Ship	ro-ro	Roll-on Roll-off
LNG	Liquified Natural Gas	ULCC	Ultra Large Crude Carrier
LPG	Liquified Petroleum Gas	VLCC	Very Large Crude Carrier
OBO	Ore/Bulk/Oil		

Time

ETA	estimated time of arrival	GMT	Greenwich Mean Time
ETD	estimated time of departure	UTC	Coordinated Universal Time

Water level

MSL	mean sea level	LWS	low water springs
HW	high water	MHWN	mean high water neaps
LW	low water	MHWS	mean high water springs
MHW	mean high water	MLWN	mean low water neaps
MLW	mean low water	MLWS	mean low water springs
HWN	high water neaps	HAT	highest astronomical tide
HWS	high water springs	LAT	lowest astronomical tide
LWN	low water neaps		

Communications

D/F	direction finder	MF	medium frequency
R/T	radiotelephone	HF	high frequency
GMDSS	Global Maritime Distress and Safety System	VHF	very high frequency
LF	low frequency	UHF	ultra high frequency

Navigation

LANBY	Large Automatic Navigation Buoy	SPM	Single Point Mooring
NAVSAT	Navigation Satellite	TSS	Traffic Separation Scheme
ODAS	Ocean Data Acquisition System	VTC	Vessel Traffic Center
SBM	Single Buoy Mooring	VTS	Vessel Traffic Service

Miscellaneous

COLREGS	Collision Regulations		
IALA	International Association of Lighthouse Authorities	No./Nos.	Number/Numbers
		PA	Position approximate
IHO	International Hydrographic Office	PD	Position doubtful
IMO	International Maritime Organization	Pub.	Publication
loa	length overall	St./Ste.	Saint/Sainte

Warning on the Use of Floating Aids to Navigation in General to Fix a Navigation Position

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. An aid to navigation also refers to any device or structure external to a craft, designed to assist in determination of position. This includes celestial, terrestial, and electronic means, such as the Global Positioning System (GPS) and Differential GPS (DGPS). Here, too, the prudent mariner will not rely solely on any single aid to navigation.

The buoy symbol is used to indicate the approximate position of the buoy body and the sinker, which secures the buoy to the seabed. 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 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 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 the result of ice or other natural causes, collisions, or other accidents. Many of these factors also apply to articulated lights. For the foregoing reasons, a prudent mariner must not rely completely upon the 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.

Use of Foreign Charts

In the interest of safe navigation, caution should be exercised in the use of foreign charts not maintained through U.S. Notice to Mariners.

Foreign produced charts are occasionally mentioned in NIMA Sailing Directions when such charts may be of a better scale than U.S. produced charts. Mariners are advised that if or when such foreign charts are used for navigation it is their responsibility to maintain those charts from the Notice to Mariners of the foreign country producing the charts.

The mariner is warned that the buoyage systems, shapes, colors, and light rhythms used by other countries often have a different significance than the U.S. system.

Mariners are further warned about plotting positions, especially satellite-derived positions such as from GPS, onto foreign charts where the datum is unknown or the conversion from WGS-84 is unknown.

Chart Notes Regarding Different Datums

Particular caution should be exercised during a passage when transferring the navigational plot to an adjacent chart upon a different geodetic datum or when transferring positions from one chart to another chart of the same area, which is based upon a different datum. The transfer of positions should be done by bearings and distances from common features. Notes on charts should be read with care, as they give important information not graphically presented. Notes in connection with the chart title include the horizontal geodetic datum which serves as a reference for the values of the latitude and longitude of any point or object on the chart. The latitudes and longitudes of the same points or objects on a second chart of the same area, which is based upon a different datum, will differ from those of the first chart. The difference may be navigationally significant. Additionally, datum changes between chart editions could significantly affect the positions of navigational aids found in the List of Lights and other NIMA publications.

Positions obtained from satellite navigation systems, such as from GPS, are normally referred to the World Geodetic System 1984 (WGS-84) Datum. The differences between GPS satellite-derived positions and positions on some foreign charts cannot be determined: mariners are warned that these differences MAY BE SIGNIFICANT TO NAVIGATION and are therefore advised to use alternative sources of positional information, particularly when closing the shore or navigating in the vicinity of dangers.

AMERICAN SAMOA

General

American Samoa, an unincorporated territory of the United States, consists of those islands of the Samoan group located in the South Pacific Ocean, E of 171˚W. The administrative center is Pago Pago, on the main island of Tutuila.

Tutuila is about 19 miles long and 4 miles wide. A broken jungle-covered mountain range runs almost the length of the island. There are many fertile valleys. Mount Matafao, 702m high, is the highest peak. Mount Pioa, known as the "Rainmaker," is 563m high. The whole island is thickly wooded and richly green, with many fertile valleys.

There are six other islands in the group. Aunuu, Tau, Ofu, and Olosega are volcanic islands, with rugged peaks and limited coastal plains. Rose Island, a small isolated double-coral atoll, is uninhabited. Swain's Island, a coral atoll 210 miles N of Tutuila, was made part of American Samoa in 1925.

The climate is tropical marine, moderated by SE trade winds. The prevailing winds are from between ESE and NNE. They are fairly constant from May to November but are fitful, with periods of calm, from November to April.

The annual rainfall averages over 3,000mm. The rainy season is from November to April, with January being the rainiest month; the dry season runs from May to October.

There is little temperature variation; December is the warmest month and July is the coldest, but the average temperature difference is only about 1-2˚C.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Hurricanes are liable to occur from January to March and occasionally up to the middle of April.

Currency

The official unit of currency is the U. S. dollar, consisting of 100 cents.

Government

American Samoa is an unincorporated and unorganized territory of the United States. It is administered by the Department of Interior, Office of Territorial and International Affairs. The islands are organized into 15 counties grouped into three districts.

American Samoa is governed by a directly-elected Governor serving a 4-year term. The Legislative Assembly consists of an 18-member Senate, whose members are elected by the chiefs

Flag of American Samoa

and serve 4-year terms, and a 21-member directly-elected House of Representatives serving 2-year terms.

The capital is Pago Pago.

Holidays

The following holidays are observed:

January 1	New Year's Day
Third Monday in January	Martin Luther King Day
Third Monday in February	President's Day
April 17	Flag Day
Last Monday in May	Memorial Day
July 4	Independence Day
July 16	Manua Day
First Monday in September	Labor Day
Second Monday in October	Columbus Day
November 11	Veteran's Day
Fourth Thursday in November	Thanksgiving Day
December 25	Christmas Day

Industries

The main industries are based on fishing, tuna canning, meat canning, and handicrafts.

Most of American Samoa's trade is with the United States, New Zealand, and Japan.

Languages

Their is no official language of American Samoa. English and Samoan are commonly spoken.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of American Samoa are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

Time Zone

The Time Zone description is XRAY (+11). Daylight Savings Time is not observed.

U.S. Embassy

American Samoa is an unincorporated territory of the United States. There are no U.S. diplomatic offices in American Samoa.

AUSTRALIA

General

Australia, the world's sixth-largest country and smallest continent, is located S of the Indonesian archipelago and is bounded on the E by the Pacific Ocean and on the W and S by the Indian Ocean.

The Great Barrier Reef fringes the NE coast of the country and extends for about 1,200 miles.

Most of the country consists of low irregular plateaus. The desert-like center is flat, barren, and dry. Large areas of fertile plain are located in the SE part.

The climate is generally arid to semiarid but there are wide variations. The N part is tropical and the S and E parts are temperate.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

The general direction of buoyage for the purposes of the IALA Buoyage System is E to W along the S coast of Australia, N along the W coast of Australia, N along the W coast of Australia, counterclockwise in the Gulf of Caprentaria, from W to E in Torres Strait, and N to S along the E coast of Australia

Cautions

General

The volume of commercial shipping passing through Torres Strait is considerable. A large number of local craft also operate between the islands.

Seismic Surveys

In connection with the exploration for oil and gas, seismic survey vessels are operating off the Australian coast. When

possible, general details of these activities will be broadcast as AUSCOAST Warnings. However, vessels carrying out such surveys may be encountered without warning.

Currency

The official unit of currency is the Australian dollar, consisting of 100 cents.

Firing Areas

Firing Practice and Exercise Areas

The tables and graphics displayed below indicate details concerning the declared firing practice areas under Australian Army, Air Force, and Naval Forces Regulations.

Firing practice areas may be selected anywhere and details are published in the *Australian Government Gazette* and the *Designated Airspace Handbook*.

In view of the responsibility of range authorities to avoid accidents, limits of practice areas are not shown on charts and descriptions of areas will not appear in the Sailing Directions (Enroute). However, beacons, lights, and marking buoys which may be of assistance to the mariner or targets, which might be a danger to navigation, will appear on charts and, when appropriate, will be mentioned in the Sailing Directions.

Definitions

A Restricted Area (R) is an area of defined dimensions within which certain restrictions are applied to aircraft operations. When shown as an R area in Notices to Mariners, the air activity extends to sea level and the nature of the activity is such that dangers to maritime traffic may exist at specified times within the area defined in Notices to Mariners.

A Prohibited Area (P) is an area of defined dimensions within which ships are not permitted under any circumstances.

A Surface Restricted Area (SR) is a surface area of defined dimensions within which activities dangerous to maritime traffic may exist at specified times. The restriction is applicable to maritime traffic only.

The limits of all areas are laid down numerically by State, and displayed graphically on the chartlets. Naval firings outside the areas listed are approved by the Department of Defense (Navy Office) from time to time. Warnings concerning firing practices are promulgated by Notices to Airmen (NOTAM) originated by the RAN and RAAF and are published by Airservices Australia on their website.

Airservices Australia Home Page
http://www.airservicesaustralia.com/brief/areabrf.htm

RESTRICTED AND DANGER AREAS WITH ASSOCIATED AIRSPACE
NEW SOUTH WALES

Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
SR050	Broken Bay	Naval mine laying and sweeping	H24	a. 33˚34'38"S, 151˚18'30"E. b. 33˚32'54"S, 151˚18'39"E. c. 33˚32'52"S, 151˚20'45"E. d. 33˚31'44"S, 151˚24'14"E. e. 33˚31'09"S, 151˚25'15"E. f. 33˚31'09"S, 151˚32'24"E. g. 33˚37'35"S, 151˚28'00"E. h. 33˚37'35"S, 151˚20'30"E. i. 33˚35'04"S, 151˚20'03"E. j. 33˚34'45"S, 151˚19'44"E.	2
SR051	Jervis Bay	Naval mine laying and sweeping	H24	a. 35˚04'24"S, 150˚41'50"E. b. 35˚00'32"S, 150˚43'27"E. c. 35˚01'05"S, 150˚46'00"E. d. 35˚04'52"S, 150˚46'26"E. e. 35˚05'38"S, 150˚48'00"E. f. 35˚05'45"S, 150˚48'26"E. g. 35˚05'45"S, 150˚55'09"E. h. 35˚10'02"S, 150˚51'32"E.	1

RESTRICTED AND DANGER AREAS WITH ASSOCIATED AIRSPACE
NEW SOUTH WALES

Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YMMM/R452	Beecroft Head	Firing	NOTAM	a. 34˚59'00"S, 151˚07'00"E. b. 35˚08'54"S, 151˚07'00"E. c. 35˚05'27"S, 150˚48'56"E. d. 35˚05'27"S, 150˚47'12"E. e. 35˚06'06"S, 150˚42'48"E. f. 35˚04'20"S, 150˚42'15"E. g. 35˚02'18"S, 150˚42'09"E. h. 35˚00'00"S, 150˚44'00"E. i. 35˚01'24"S, 150˚47'15"E. j. 35˚01'24"S, 150˚50'24"E.	1
YMMM/R453	Tasman Sea	Firing, bombing, and radar tracking	NOTAM	**R453A—**34˚59'59"S, 150˚49'53"E; then the minor arc of a circle 15 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E) to 34˚57'30"S, 150˚50'14"E; 34˚57'24"S, 150˚59'58"E; then the minor arc of a circle 23 NM in radius centered on Nowra Tacan, to 35˚12'02"S, 150˚53'14"E; 35˚03'04"S, 150˚40'06"E; then the minor arc of a circle 9 NM in radius centered on Nowra Tacan, to 34˚59'11"S, 150˚42'37"E.	1
			NOTAM	**R453B—**35˚05'59"S, 150˚33'00"E; then the minor arc of a circle 9 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚03'04"S, 150˚40'06"E; 35˚12'02"S, 150˚53'14"E; then the minor arc of a circle 23 NM in radius centered on Nowra Tacan, to 35˚19'57"S, 150˚34'29"E.	1
			NOTAM	**R453C—**34˚57'02"S, 151˚30'18"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚13'25"S, 151˚26'53"E; 35˚05'04"S, 150˚58'14"E; then the minor arc of a circle 23 NM in radius centered on Nowra Tacan, to 34˚57'24"S, 150˚59'58"E.	1
			NOTAM	**R453D—**35˚13'25"S, 151˚26'53"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚27'57"S, 151˚16'43"E; 35˚12'02"S, 150˚53'14"E; then the minor arc of a circle 23 NM in radius centered on Nowra Tacan, to 35˚05'04"S, 150˚58'14"E.	1

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YMMM/R453	Tasman Sea	Firing, bombing, and radar tracking	NOTAM	**R453E—**35˚27'57"S, 151˚16'43"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚38'34"S, 151˚01'18"E; 35˚16'58"S, 150˚45'59"E; then the minor arc of a circle 23 NM in radius centered on Nowra Tacan, to 35˚12'02"S, 150˚53'14"E.	1
			NOTAM	**R453F—**35˚38'34"S, 151˚01'18"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚44'49"S, 150˚37'09"E; 35˚19'57"S, 150˚34'29"E; then the minor arc of a circle 23 NM in radius centered on Nowra Tacan, to 35˚16'58"S, 150˚45'59"E.	1
			NOTAM	**R453G—**34˚56'32"S, 151˚59'35"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚21'23"S, 151˚54'38"E; 35˚13'25"S, 151˚26'53"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan, to 34˚57'02"S, 151˚30'18"E.	1
			NOTAM	**R453H—**35˚21'23"S, 151˚54'38"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚43'14"S, 151˚ 39'32"E; 35˚27'57"S, 151˚16'43"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan to 35˚13'25"S, 151˚26'53"E.	1
			NOTAM	**R453J—**35˚43'14"S, 151˚39'32"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 35˚59'23"S, 151˚16'13"E; 35˚38'34"S, 151˚01'18"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan, to 35˚27'57"S, 151˚16'43"E.	1

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Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YBBB-YMMM/ R453	Tasman Sea	Firing, bombing, and radar tracking	NOTAM	**R453K—**35˚59'23"S, 151˚16'13"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 36˚08'50"S, 150˚39'45"E; 35˚44'49"S, 150˚37'09"E; then the minor arc of a circle 47.9 NM in radius centered on Nowra Tacan, to 35˚38'34"S, 151˚01'18"E.	1
			NOTAM	**R453L—**34˚56'01"S, 152˚25'27"E; 35˚18'59"S, 152˚55'50"E; then the minor arc of a circle 120 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚ 32'00"E), to 35˚36'56"S, 152˚50'15"E; 35˚21'23"S, 151˚54'38"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan, to 34˚56'32"S, 151˚59'35"E.	1
			NOTAM	**R453M—**35˚36'56"S, 152˚50'15"E; then the minor arc of a circle 120 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 36˚13'30"S, 152˚25'29"E; 35˚43'14"S, 151˚39'32"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan, to 35˚21'23"S, 151˚54'38"E.	1
			NOTAM	**R453N—**36˚13'30"S, 152˚25'29"E; then the minor arc of a circle 120 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 36˚40'48"S, 151˚46'21"E; 35˚59'23"S, 151˚16'13"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan, to 35˚43'14"S, 151˚39'32"E.	1
			NOTAM	**R453P—**36˚40'48"S, 151˚46'21"E; then the minor arc of a circle 120 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to 36˚56'43"S, 150˚45'01"E; 36˚08'50"S, 150˚39'45"E; then the minor arc of a circle 72 NM in radius centered on Nowra Tacan, to 35˚59'23"S, 151˚16'13"E.	1

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Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YMMM/R485A	Tasman Sea	Military flying training	NOTAM	**R485A** a. 34˚26'37"S, 151˚09'46"E b. 34˚06'00"S, 151˚19'43"E. c. 34˚06'00"S, 151˚45'06"E. then the minor arc of a circle 30 NM in radius centered on Sydney DME (33˚56'34"S, 151˚10'51"E), returning to position (a) above.	1
YBBB-YMMM/ R485B	Tasman Sea	Military flying training	NOTAM	**R485B** a. 34˚30'00"S, 151˚51'35"E. b. 34˚30'00"S, 151˚08'07"E. c. 34˚26'37"S, 151˚09'46"E. then the minor arc of a circle 30 NM in radius centered on Sydney DME (33˚56'34"S, 151˚10'51"E), to d. 34˚06'00"S, 151˚45'06"E. e. 34˚06'00"S, 152˚03'16"E.	1
YBBB-YMMM/ R485B	Tasman Sea	Military flying training	NOTAM	**R485C** a. 34˚20'29"S, 151˚56'14"E. b. 34˚06'00"S, 152˚03'16"E. c. 34˚06'00"S, 152˚34'17"E. then the minor arc of a circle 70 NM in radius centered on Sydney DME (33˚56'34"S, 151˚10'51"E), to d. 34˚30'53"S, 152˚24'28"E.	1
YBBB-YMMM/ R485C	Tasman Sea	Military flying training	NOTAM	**R485D** a. 34˚30'53"S, 152˚24'28"E. then the minor arc of a circle 70 NM in radius centered on Sydney DME (33˚56'34"S, 151˚10'51"E), to b. 34˚06'00"S, 152˚34'17"E. c. 34˚06'00"S, 153˚34'46"E. then the minor arc of a circle 120 NM in radius centered on Sydney DME to d. 34˚50'59"S, 153˚20'09"E.	1
YBBB-YMMM/ R485D	Tasman Sea	Military flying training	NOTAM	**R485E** a. 34˚30'00"S, 151˚51'35"E. b. 34˚20'29"S, 151˚56'14"E. c. 34˚50'59"S, 153˚20'09"E. then the minor arc of a circle 120 NM in radius centered on Sydney DME (33˚56'34"S, 151˚10'51"E), to d. 35˚19'20"S, 152˚56'18"E.	1
YBBB-YMMM/ R489	Tasman Sea	Firing, bombing, and radar tracking	NOTAM	a. 33˚38'02"S, 151˚51'02"E. b. 33˚26'06"S, 152˚00'27"E. c. 33˚25'47"S, 152˚22'03"E. d. 33˚44'42"S, 152˚22'04"E. e. 33˚47'23"S, 151˚51'02"E.	2

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Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YMMM/R495	Tasman Sea	Firing, bombing, and radar tracking	NOTAM	**R495A** a. 34˚43'56"S, 151˚00'00"E. b. 34˚40'30"S, 151˚03'00"E. c. 34˚30'00"S, 151˚08'07"E. d. 34˚30'00"S, 151˚30'00"E. e. 34˚57'02"S, 151˚30'18"E. f. 34˚57'24"S, 150˚59'58"E. then the minor arc of a circle 23 NM in radius centered on Nowra Tacan (34˚57'00"S, 150˚32'00"E), to g. 34˚56'07'S, 150˚59'57E.	1
YMMM/R495	Tasman Sea	Firing, bombing, and radar tracking	NOTAM	**R495B** a. 34˚30'00"S, 151˚30'00"E. b. 34˚30'00"S, 151˚51'35"E. c. 34˚36'30"S, 151˚59'59"E. d. 34˚56'32"S, 151˚59'35"E. e. 34˚57'02"S, 151˚30'18"E.	1
			NOTAM	**R495C** a. 34˚56'32"S, 151˚59'35"E. b. 34˚36'30"S, 151˚59'59"E. c. 34˚56'01"S, 152˚25'27"E.	1
YBBB/R595	Williamtown	Military intercept training	H24	a. 32˚00'00"S, 152˚45'52"E. b. 31˚00'21"S, 153˚16'04"E. c. 30˚27'37"S, 153˚32'21"E. d. 31˚01'44"S, 155˚18'14"E. e. 32˚33'37"S, 154˚47'57"E. f. 33˚51'30"S, 154˚01'56"E. g. 33˚51'30"S, 152˚07'57"E. h. 33˚32'50"S, 151˚58'52"E. i. 33˚12'21"S, 151˚56'02"E. then the minor arc of a circle 25 NM in radius centered on Williamtown Tacan (32˚47'49"S, 151˚50'00"E); to j. 32˚44'36"S, 152˚19'24"E. k. 32˚25'00"S, 152˚33'00"E.	2
YBBB/R596	Williamtown	Firing	H24	a. 32˚42'00"S, 152˚04'00"E. b. 32˚46'30"S, 152˚04'00"E. c. 32˚49'00"S, 151˚55'00"E. d. 32˚46'00"S, 151˚51'00"E. e. 32˚39'30"S, 151˚51'00"E. f. 32˚39'30"S, 151˚57'45"E.	2
YBBB/R609	Evans Head	Firing	NOTAM	29˚14'00"S, 153˚24'00"E; then the major arc of a circle 3 NM in radius centered on 29˚11'00"S, 153˚ 24'00"E; to 29˚10'13"S, 153˚27'19"E.	2

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Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YBBB/R641	Evans Head	Firing	H24	**R641A** a. 28˚57'00"S, 153˚27'30"E. b. 28˚56'21"S, 153˚31'28"E. then along the coast to 29˚06'55"S, 153˚26'11"E; then along the N bank of the Evans River and the Richmond River to 29˚01'20"S, 153˚17'00"E.	2
			H24	**R641B** a. 29˚15'00"S, 153˚03'30"E. b. 29˚06'00"S, 153˚05'40"E. c. 29˚01'20"S, 153˚17'00"E. then along the N bank of the Evans River and the Richmond River to 29˚06'55"S, 153˚26'11"E; then along the coast to 29˚26'28"S, 153˚22'12"E.	2
			H24	**R641C** a. 29˚15'00"S, 153˚03'30"E. b. 29˚06'00"S, 153˚05'40"E. c. 28˚57'00"S, 153˚27'30"E. d. 28˚56'21"S, 153˚31'28"E. then along the coast to 29˚26'28"S, 153˚22'12"E.	2
			NOTAM	**R641D** a. 29˚15'00"S, 153˚03'30"E. b. 29˚06'00"S, 153˚05'40"E. c. 28˚57'00"S, 153˚27'30"E. d. 28˚56'21"S, 153˚31'28"E. then along the coast to 29˚26'28"S, 153˚22'12"E.	2
			H24	**R641E—**28˚52'13"S, 153˚49'39"E; then the minor arc of a circle 30 NM in radius centered on 29˚11'51"S, 153˚23'44"E; to 29˚41'39"S, 153˚19'07"E; then along the coast to 28˚56'21"S, 153˚31'28"E.	2
			H24	**R641F—**28˚52'13"S, 153˚49'39"E; then the minor arc of a circle 30 NM in radius centered on 29˚11'51"S, 153˚23'44"E; to 29˚41'39"S, 153˚19'07"E; then along the coast to 28˚56'21"S, 153˚31'28"E.	2
			NOTAM	**R641G—**28˚52'13"S, 153˚49'39"E; then the minor arc of a circle 30 NM in radius centered on 29˚11'51"S, 153˚23'44"E; to 29˚41'39"S, 153˚19'07"E; then along the coast to 28˚56'21"S, 153˚31'28"E.	2

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Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YBBB/R676	Cape Moreton	Firing	NOTAM	a. 26˚57'00"S, 153˚25'00"E. b. 26˚48'00"S, 153˚30'00"E. c. 26˚52'00"S, 153˚40'00"E. d. 27˚01'00"S, 153˚36'00"E.	3
YBBB/R677	Brisbane	Military flying and laser operations	H24	**R677A** a. 27˚20'00"S, 154˚00'00"E. b. 25˚45'00"S, 154˚00'00"E. c. 25˚45'00"S, 155˚16'16"E. then along the minor arc of a circle 150 NM radius centered on Brisbane DME (27˚21'57"S, 153˚08'21"E) to d. 27˚20'00"S, 155˚56'48"E.	3
YBBB/R677	Brisbane	Military flying and laser operations	H24	**R677B** a. 28˚45'03"S, 154˚00'00"E. b. 27˚20'00"S, 154˚00'00"E. c. 27˚20'00"S, 155˚56'48"E. then along the minor arc of a circle 150 NM radius centered on Brisbane DME (27˚21'57"S, 153˚08'21"E) to d. 29˚05'00"S, 155˚12'04"E. e. 29˚05'00"S, 155˚10'23"E.	3
YBBB/R680	Akens Island	Firing	NOTAM	a. 22˚17'00"S, 150˚12'00"E. b. 22˚15'00"S, 150˚20'00"E. c. 22˚12'34"S, 150˚25'27"E. d. 22˚15'06"S, 150˚23'42"E. e. 22˚17'54"S, 150˚23'12"E. f. 22˚23'42"S, 150˚26'12"E. g. 22˚30'30"S, 150˚27'00"E. then N along the coast, to h. 22˚19'00"S, 150˚10'46"E.	4
YBBB/R681	Wide Bay	Firing	NOTAM	**R681A** a. 25˚55'39"S, 152˚55'12"E. b. 25˚48'39"S, 152˚55'13"E. c. 25˚49'26"S, 152˚51'46"E. then along Maryborough Cooloola Road to d. 25˚55'39"S, 152˚51'33"E.	3
			NOTAM	**R681B** a. 25˚48'23"S, 152˚56'12"E. b. 25˚48'39"S, 152˚55'13"E. c. 25˚55'39"S, 152˚55'12"E. d. 25˚54'58"S, 152˚58'51"E. e. 25˚52'57"S, 152˚59'20"E. f. 25˚52'32"S, 153˚00'01"E. then along the N side of Teebar Creek to g. 25˚50'43"S, 153˚01'23"E. then along Tin Can Bay Inlet to h. 25˚49'40"S, 153˚01'12"E. then along the coast of Wide Bay to i. 25˚47'51"S, 152˚58'59"E. then along the S side of Red Bank to j. 25˚48'40"S, 152˚58'03"E.	3

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YBBB/R682	Townshend Island	Firing	NOTAM	a. 22˚17'54"S, 150˚23'12"E. b. 22˚15'06"S, 150˚23'42"E. c. 22˚06'00"S, 150˚30'00"E. d. 22˚06'00"S, 150˚45'00"E. e. 22˚19'00"S, 150˚49'00"E. f. 22˚19'00"S, 150˚33'00"E. g. 22˚25'56"S, 150˚26'28"E. h. 22˚23'42"S, 150˚26'12"E.	4
YBBB/R683	Cape Clinton	Firing	NOTAM	a. 22˚30'30"S, 150˚27'00"E. b. 22˚25'56"S, 150˚26'28"E. c. 22˚19'00"S, 150˚33'00"E. d. 22˚19'00"S, 150˚49'00"E. e. 22˚41'19"S, 150˚50'31"E.	4
YBBB/R684	Mount Hummock	Firing	H24	**R684A** a. 22˚55'00"S, 150˚27'00"E. b. 22˚30'30"S, 150˚27'00"E. c. 22˚41'19"S, 150˚50'31"E. d. 22˚49'22"S, 150˚47'07"E. e. 22˚47'57"S, 150˚37'21"E. f. 22˚54'00"S, 150˚36'00"E.	4
			NOTAM	**R684B** a. 22˚55'00"S, 150˚27'00"E. b. 22˚30'30"S, 150˚27'00"E. c. 22˚41'19"S, 150˚50'31"E. d. 22˚49'22"S, 150˚47'07"E. e. 22˚47'57"S, 150˚37'21"E. f. 22˚54'00"S, 150˚36'00"E.	4
YBBB/R686	Triangular Island	Explosives demolition	NOTAM	A circle 3 NM in radius centered on 22˚23'00"S, 150˚30'30"E.	4
YBBB/R687	Raspberry Creek	Firing	H24	**R687A** a. 22˚52'05"S, 150˚16'31"E. b. 22˚27'04"S, 150˚05'46"E. c. 22˚19'00"S, 150˚10'46"E. then SE along the coast, to d. 22˚30'30"S, 150˚27'00"E. e. 22˚55'00"S, 150˚27'00"E.	4
			NOTAM	**R687B** a. 22˚52'05"S, 150˚16'31"E. b. 22˚27'04"S, 150˚05'46"E. c. 22˚19'00"S, 150˚10'46"E. then SE along the coast, to d. 22˚30'30"S, 150˚27'00"E. e. 22˚55'00"S, 150˚27'00"E.	4

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YBBB/R689	Shoalwater Bay	Firing	NOTAM	a. 22˚27'04"S, 150˚05'46"E. b. 22˚15'09"S, 150˚00'40"E. then the major arc of a circle 30 NM in radius centered on 22˚16'00"S, 150˚33'00"E. c. 22˚41'19"S, 150˚50'31"E. d. 22˚19'00"S, 150˚49'00"E. e. 22˚06'00"S, 150˚45'00"E. f. 22˚06'00"S, 150˚30'00"E. g. 22˚12'34"S, 150˚25'27"E. h. 22˚15'00"S, 150˚20'00"E. i. 22˚17'00"S, 150˚12'00"E.	4
YBBB/R693	Elliott	Firing	NOTAM	a. 24˚24'00"S, 152˚08'00"E. b. 24˚11'00"S, 152˚31'00"E. c. 24˚28'00"S, 152˚58'00"E. d. 24˚41'00"S, 152˚34'00"E.	3
YBBB/R695	Herbert Creek	Firing	H24	**R695A** a. 22˚38'00"S, 150˚05'30"E. b. 22˚27'30"S, 150˚05'30"E. c. 22˚27'04"S, 150˚05'46"E. d. 22˚52'05"S, 150˚16'31"E. e. 22˚51'30"S, 150˚13'30"E. f. 22˚44'30"S, 150˚08'30"E.	4
			NOTAM	**R695B** a. 22˚38'00"S, 150˚05'30"E. b. 22˚27'30"S, 150˚05'30"E. c. 22˚27'04"S, 150˚05'46"E. d. 22˚52'05"S, 150˚16'31"E. e. 22˚51'30"S, 150˚13'30"E. f. 22˚44'30"S, 150˚08'30"E.	4
			NOTAM	**R695C** a. 22˚38'00"S, 150˚05'30"E. b. 22˚27'30"S, 150˚05'30"E. c. 22˚27'04"S, 150˚05'46"E. d. 22˚52'05"S, 150˚16'31"E. e. 22˚51'30"S, 150˚13'30"E. f. 22˚44'30"S, 150˚08'30"E.	4
YBBB/R725	Saumarez Reef	Firing	NOTAM	A circle 5 NM in radius centered on 21˚51'18"S, 153˚38'47"E.	3
YBBB/R747	Rattlesnake Island	Firing	NOTAM	A circle 4.8 NM in radius centered on 19˚02'10"S, 146˚36'38"E.	5

RESTRICTED AND DANGER AREAS WITH ASSOCIATED AIRSPACE
QUEENSLAND

Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YBBB/R748	Halifax Bay	Firing	NOTAM	a. 19˚04'56"S, 146˚47'41"E. b. 19˚08'23"S, 146˚43'46"E. c. 19˚09'00"S, 146˚38'30"E. d. 19˚01'30"S, 146˚28'00"E. e. 18˚55'33"S, 146˚23'35"E. f. 18˚49'00"S, 146˚26'00"E. g. 18˚46'00"S, 146˚31'00"E. h. 18˚49'12"S, 146˚34'38"E. then the minor arc of a circle 29 NM in radius centered on Townsville Tacan (19˚16'44"S., 146˚44'33"E.); to i. 18˚48'22"S, 146˚51'25"E.	5
YBBB/R767	Cairns	Firing	NOTAM	a. 17˚19'00"S, 146˚08'18"E. b. 17˚08'00"S, 146˚07'00"E. c. 17˚07'00"S, 146˚23'00"E. d. 17˚22'00"S, 146˚25'00"E. e. 17˚23'30"S, 146˚13'00"E.	6
YBBB/R778	Cairns (Outer Reef)	Firing	NOTAM	a. 16˚41'30"S, 146˚15'00"E. b. 16˚30'00"S, 146˚15'00"E. c. 16˚30'00"S, 146˚33'00"E. d. 16˚41'30"S, 146˚33'00"E.	6
YBBB/R783	Lizard Island	Firing	NOTAM	a. 14˚33'00"S, 145˚14'00"E. b. 14˚28'00"S, 145˚22'00"E. c. 14˚34'00"S, 145˚26'00"E. d. 14˚40'00"S, 145˚18'00"E.	6

RESTRICTED AND DANGER AREAS WITH ASSOCIATED AIRSPACE
VICTORIA AND TASMANIA

Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YMMM/R323	Western Port	Firing	Mon-Fri 2300-0545 UTC or NOTAM	**R323A** a. 38˚30'00"S, 144˚55'22"E. then the major arc of a circle 5 NM in radius centered on 38˚28'55"S, 145˚01'35"E; to b. 38˚32'52"S, 145˚05'28"E. c. 38˚35'30"S, 145˚08'30"E. d. 38˚43'58"S, 145˚08'32"E. then the minor arc of a circle 16 NM in radius centered on 38˚28'55"S, 145˚01'35"E; to e. 38˚32'23"S, 144˚41'41"E.	11
			Mon-Fri 2300-0545 UTC or NOTAM	**R323B** a. 38˚29'07"S, 145˚02'00"E. b. 38˚28'55"S, 145˚01'35"E. c. 38˚32'23"S, 144˚41'41"E. then the minor arc of a circle 16 NM in radius centered on 38˚28'55"S, 145˚01'35"E; to c. 38˚44'45"S, 145˚02'00"E.	11

RESTRICTED AND DANGER AREAS WITH ASSOCIATED AIRSPACE
VICTORIA AND TASMANIA

Area	Name	Nature of Activity	Times of Use	Area limits are bound by lines joining positions stated, unless otherwise indicated	Chartlet No.
YMMM/R332	Hanns Inlet	Radar flares	H24	A circle 1.5 NM in radius centered on 38˚22'48"S, 145˚12'00"E.	11
YMMM/R339	Cape Schanck	Gunnery, military flying, and naval activity	NOTAM	a. 38˚51'00"S, 144˚21'00"E. b. 38˚38'00"S, 144˚41'00"E. c. 38˚36'16"S, 144˚43'28"E. then the minor arc of a circle 16 NM in radius centered on 38˚28'55"S, 145˚01'35"E; to d. 38˚44'45"S, 145˚04'34"E. e. 38˚49'30"S, 144˚56'30"E. f. 39˚02'00"S, 144˚34'00"E.	11
YMMM/R362	Stony Head	Firing	H24	**R362A** a. 41˚03'10"S, 146˚56'25"E. b. 41˚01'44"S, 146˚55'54"E. then along the coast to c. 41˚00'01"S, 147˚04'50"E. d. 41˚03'54"S, 147˚04'06"E.	11
			NOTAM	**R362B** a. 41˚03'10"S, 146˚56'25"E. b. 41˚01'44"S, 146˚55'54"E. then along the coast to c. 41˚00'01"S, 147˚04'50"E. d. 41˚03'54"S, 147˚04'06"E.	11
			NOTAM	**R362C** a. 40˚56'30"S, 146˚54'00"E. b. 40˚56'30"S, 147˚05'30"E. c. 41˚00'01"S, 147˚04'50"E. then along the coast to d. 41˚01'44"S, 146˚55'54"E.	11
YMMM/R374	Swan Island	Firing	H24	A circle 1 NM in radius centered on 38˚14'50"S, 144˚41'30"E.	11

Fishing Areas

A significant level of commercial fishing takes place in Torres Strait during the prawn season, which occurs from May through September. These vessels work exclusively at night and anchor in the lee of the islands by day.

Fishing traps marked by floats may be encountered over much of the coastal waters of New South Wales at any time of the year. Where possible, vessels should avoid those waters inshore of the 110m curve between 28˚30'S and 32˚30'S.

Lobster fishing takes place, as follows:

1. November to April—between Port Stephens (latitude 32˚45'S.) and Bermagui (latitude 36˚30'S.).
2. January to June—between Evans Head (latitude 29˚05'S.) and Port Stephens.

Vessels are requested to transit outside the 220m curve, if possible.

Government

Australia, a fully independent nation within the British Commonwealth of Nations, is a democratic federal/state system recognizing the British monarch as sovereign. The country is divided into six states and two territories.

Flag of Australia

Elizabeth II, recognized as the Chief of State, appoints a Governor-General. The bicameral Parliament is composed of a 76-member Senate (directly elected to 6-year terms) and a 150-member House of Representatives (directly elected through proportional representation to 3-year terms).

The legal system is base on English common law.

The capital is Canberra.

Holidays

The following holidays are observed:

January 1 *	New Year's Day
January 26 *	Australia Day
First Monday in March	Labor Day (Western Australia only)
Second Monday in March	Labor Day (Victoria and South Australia only)
Third Monday in March	Canberra Day (Canberra only)
Good Friday	Variable
Easter Saturday	Variable
Easter Sunday	Variable
Easter Monday	Variable
April 25	ANZAC Day
First Monday in June	Foundation Day
Second Monday in June	Queen's Birthday (except Western Australia)
Last Monday in September	Queen's Birthday (Western Australia only)
First Monday in October	Labor Day (Canberra, South Australia, and New South Wales only)
December 25	Christmas Day
December 26	Boxing Day

* If the holiday falls on a Saturday or Sunday, it is observed on the following Monday.

The following additional holidays in Australia are observed locally:

1. Northern Territory:
   - Alice Springs Show Day (July)
   - Tennant Creek Day (July)
   - Katherinen Show Day (July)
   - Darwin Show Day (July)
   - Borroloola Show Day (July)
   - Picnic Day (August)
2. South Australia:
   - Brisbane National Show Day (August)
   - Proclamation Day (December 26)
3. Tasmania:
   - Devonport Cup Day (January)
   - Hobart Regatta (February)
   - Launceton Cup Day (February)
   - King Island Show Day (March)
   - AGFEST (May)
   - Burnie Show Day (October)
   - Royal Launceton Show Day (October)
   - Flinders Island Show Day (October)
   - Royal Hobart Show Day (October)
   - Devonport Show Day (December)
4. Western Australia—Melbourne Cup Day (November)

Industries

The main industries include mining, industrial and transportation equipment, food processing, chemicals, steel, fishing, electrical and electronic products, oil refining, textiles, shipbuilding, aircraft assembly, and tourism.

Agriculture is also a leading industry. Principal crops include wheat, fruits, barley, oats, rice, grapes, and sugarcane. Other major products are wool, poultry, and livestock.

Languages

English is the official language. There are some native dialects in use.

Mined Areas

The following areas are declared dangerous due to mines laid during the war of 1939-1945:

1. **Great Barrier Reef.—**All passages from seaward through the Great Barrier Reef between 11˚40'S and 19˚07'S have been swept.
2. **Moreton Bay.—**An area within a circle, with a radius of 1 mile, centered on position 27˚14.6'S, 153˚21.1'E.
3. **Pyramid Rock.—**An area within a circle, with a radius of 1 mile, centered on position 39˚49'S, 147˚15'E.

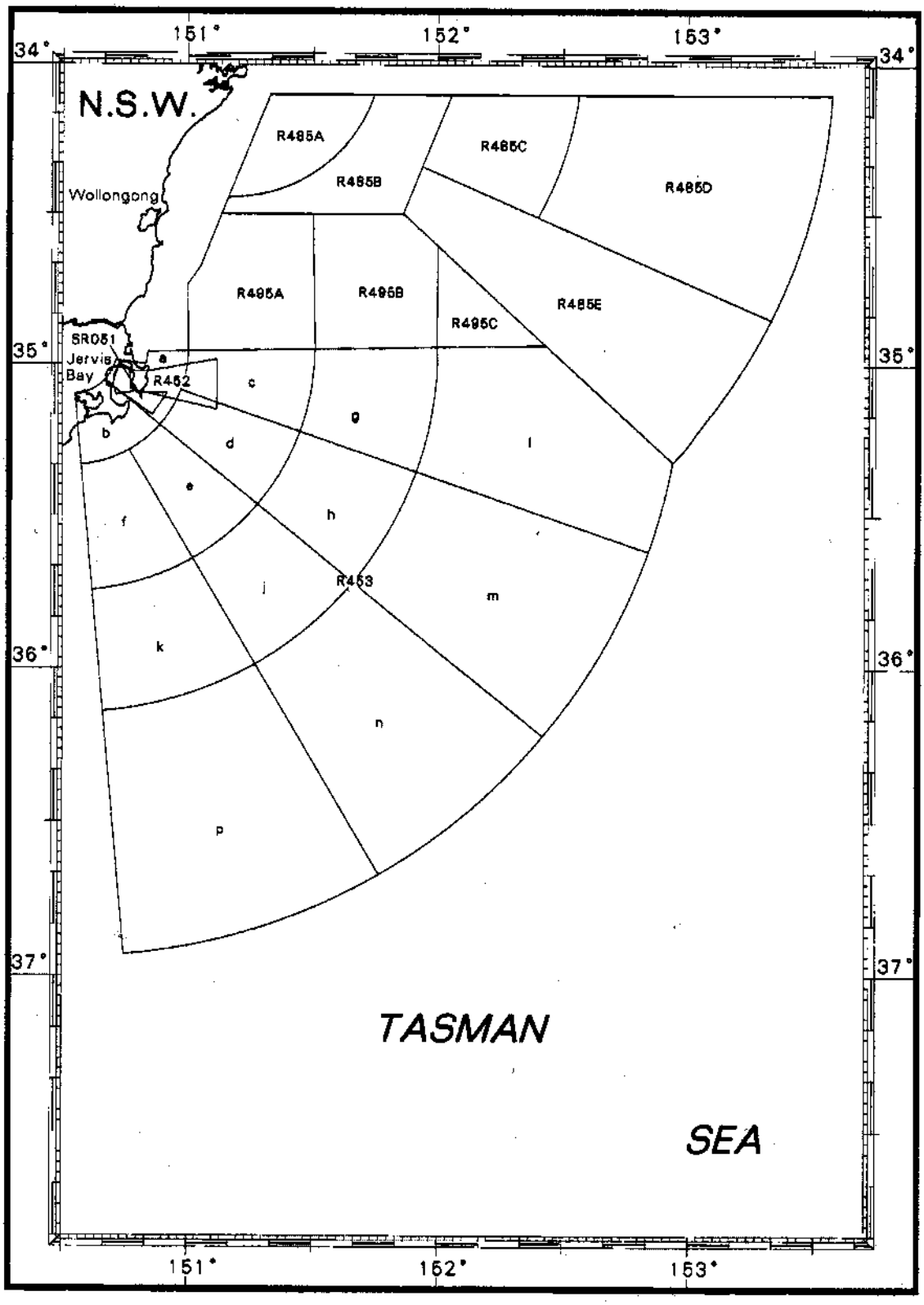
Due to the elapse of time, the risk in these areas to surface navigation is now considered no more dangerous than the ordinary risks of navigation. However, a very real risk still exists with regard to anchoring, fishing, or carrying out any form of submarine or seabed activity.

Navigational Information

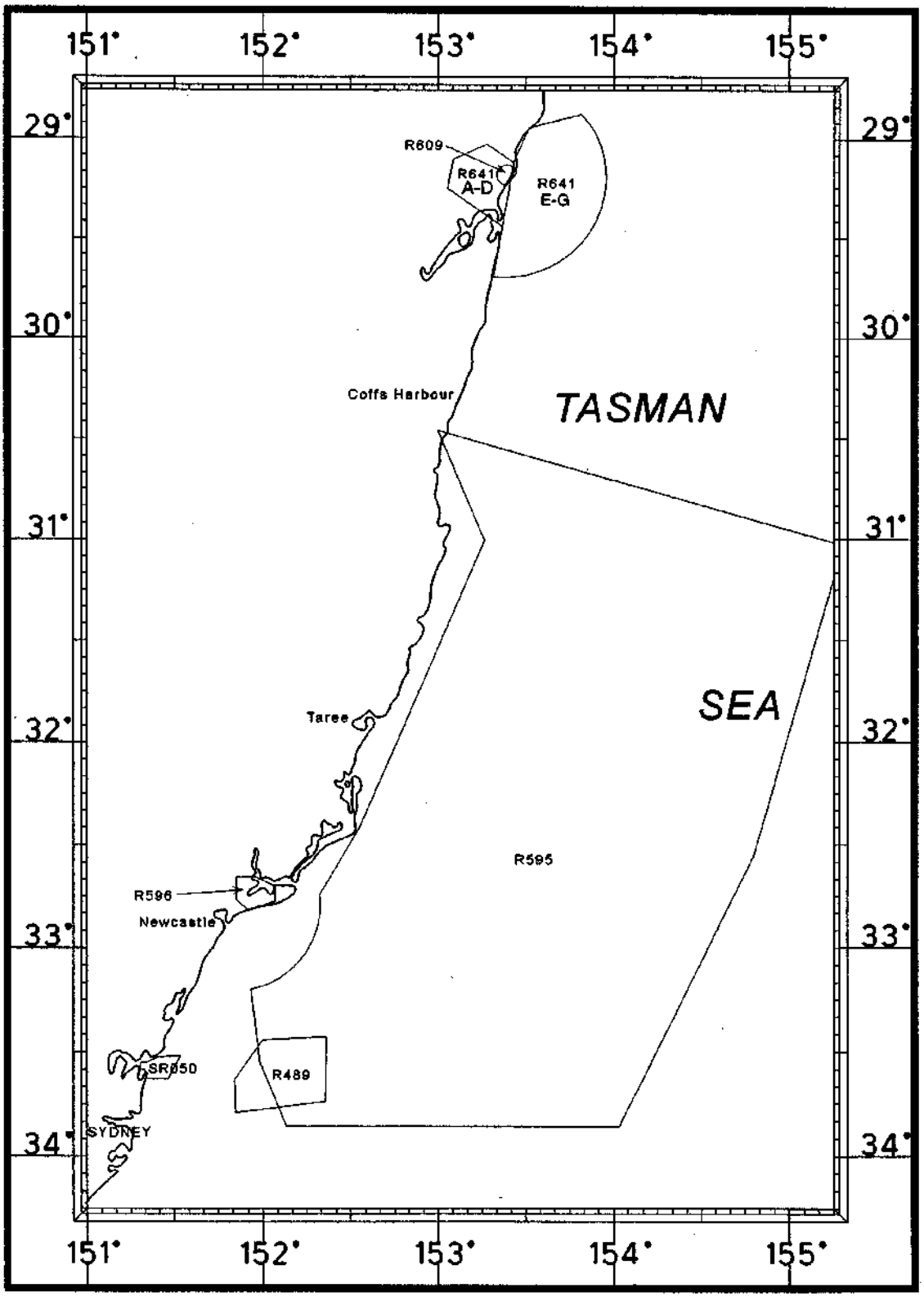
Enroute Volumes

Pub. 127, Sailing Directions (Enroute) East Coast of Australia and New Zealand.

Pub. 175, Sailing Directions (Enroute) North, West, and South Coasts of Australia



Chartlet No. 1



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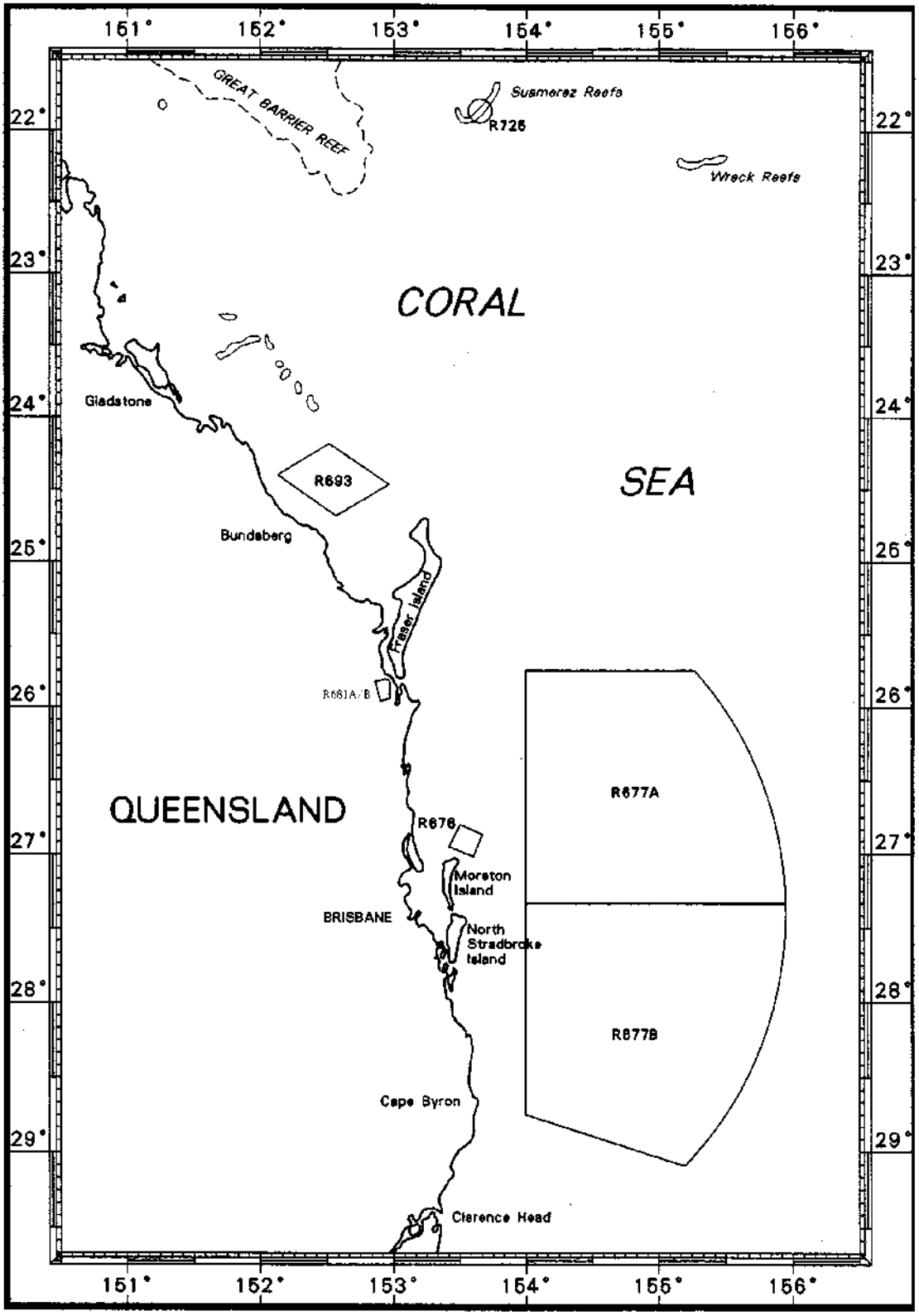

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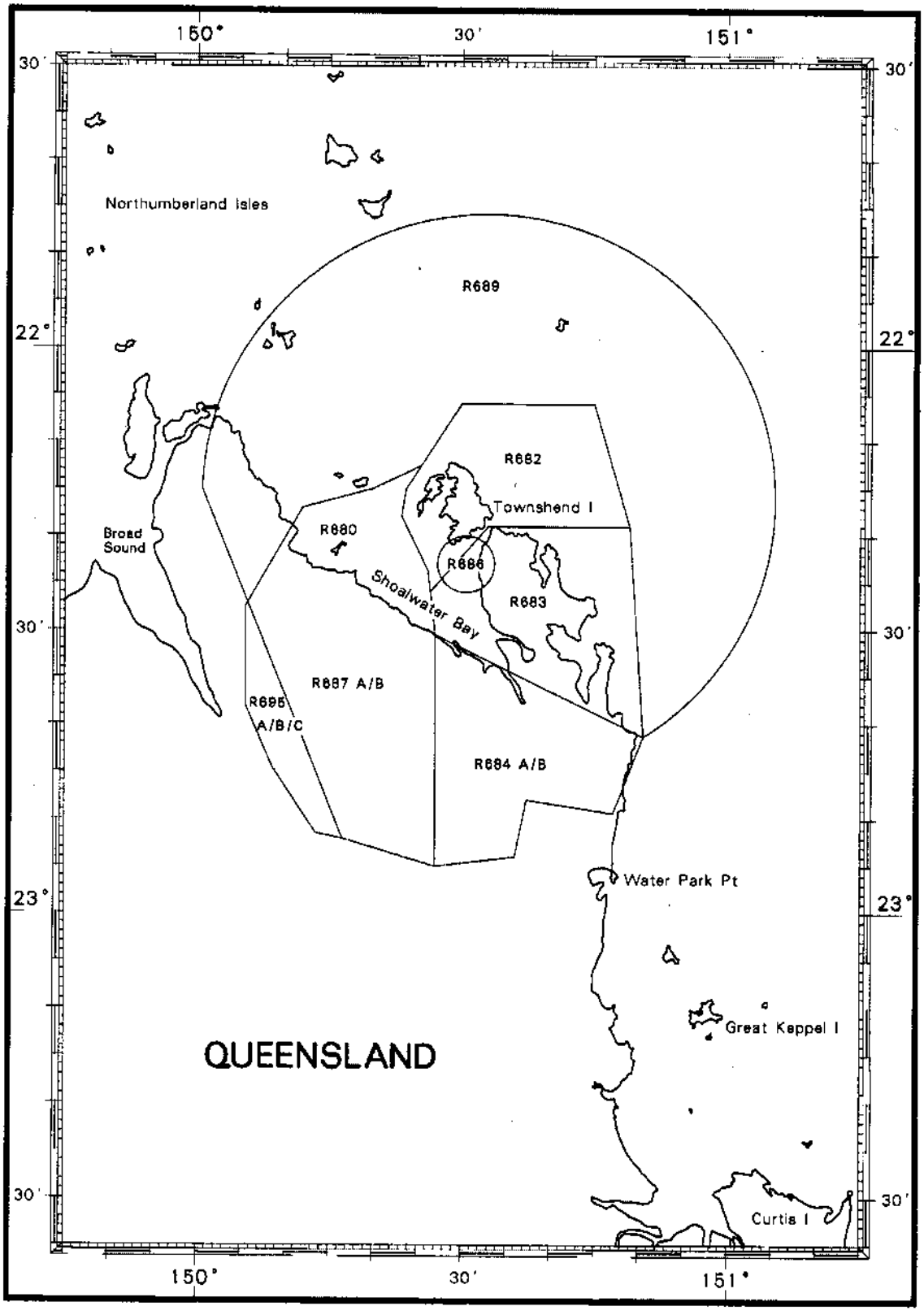

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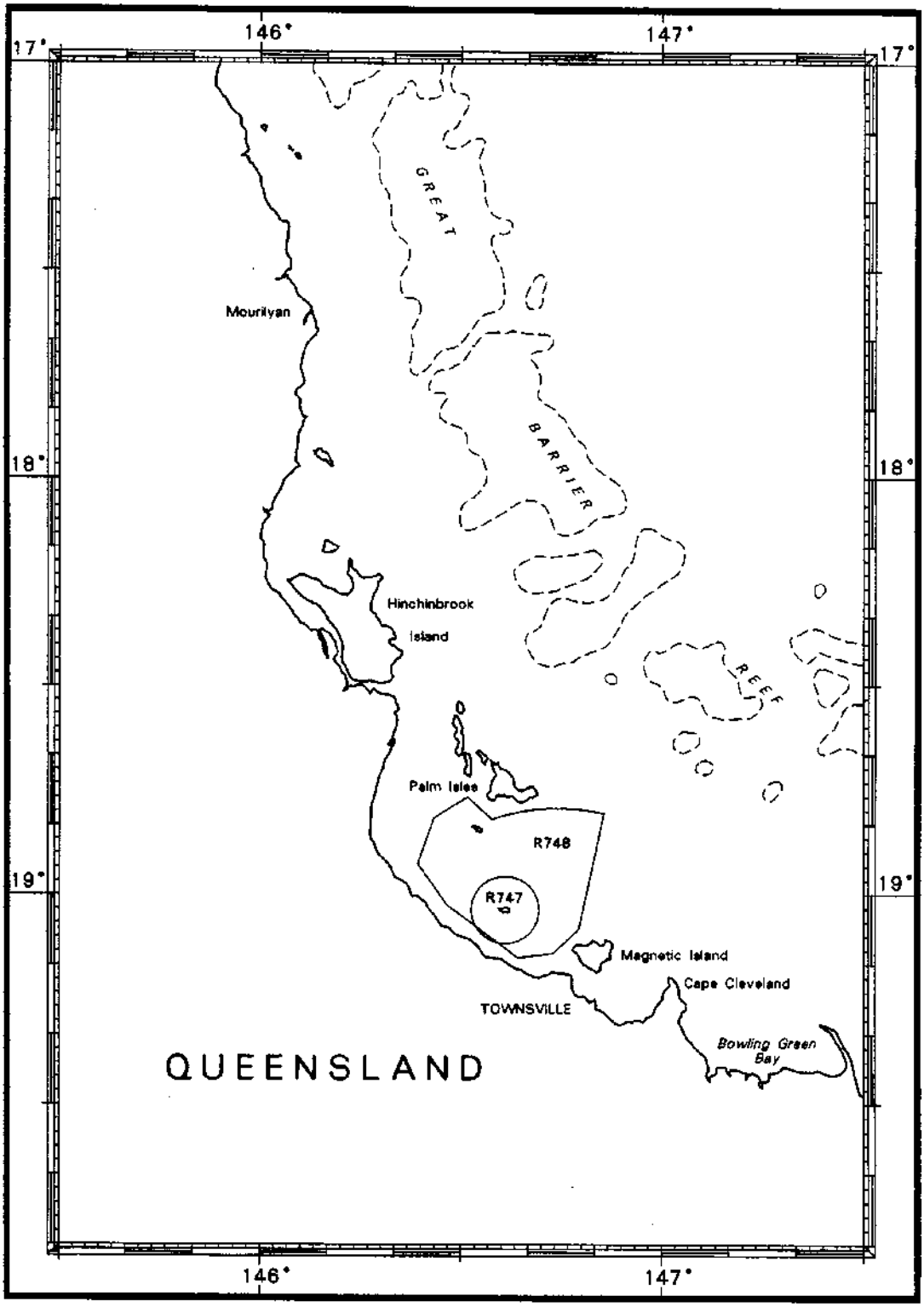

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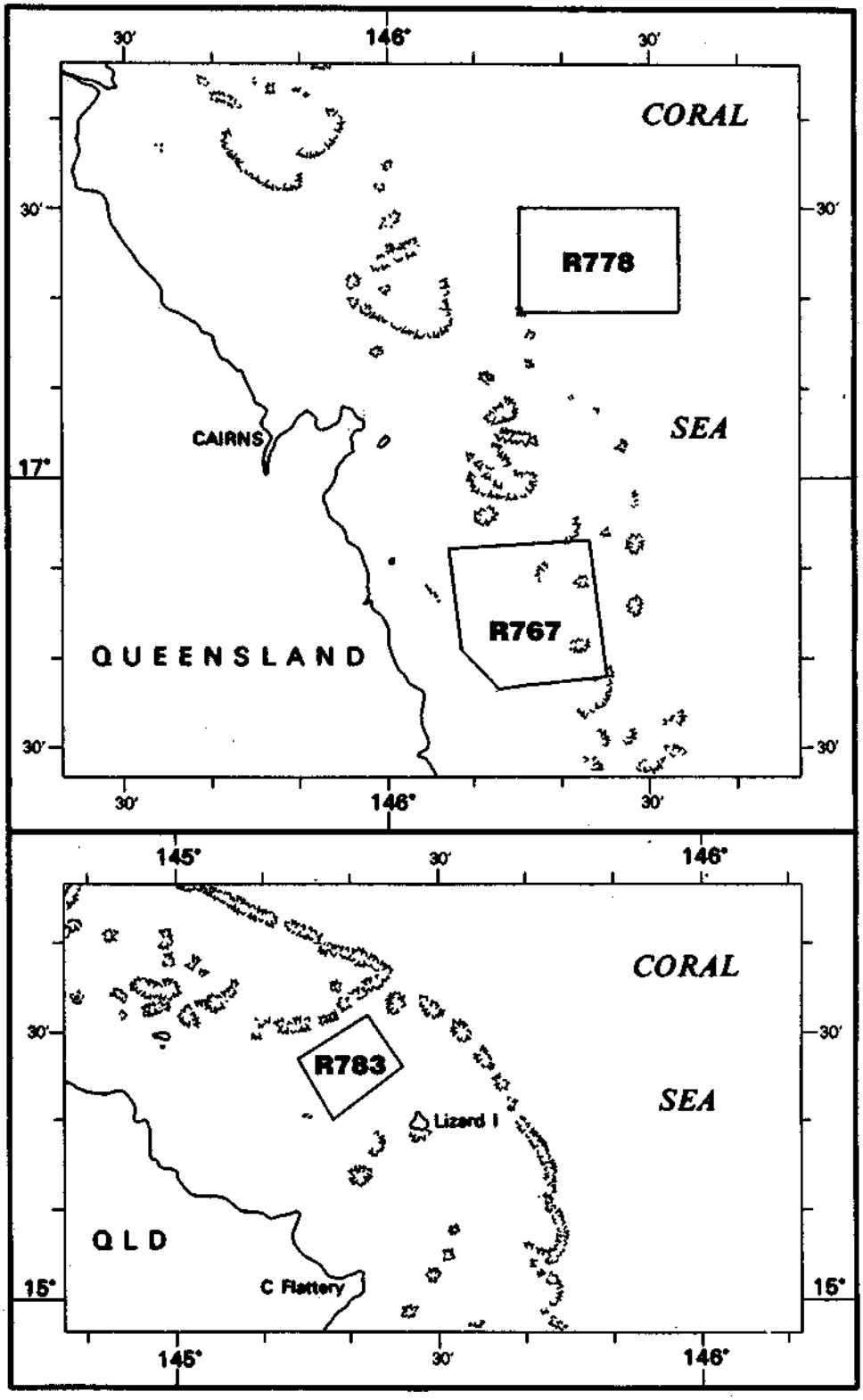

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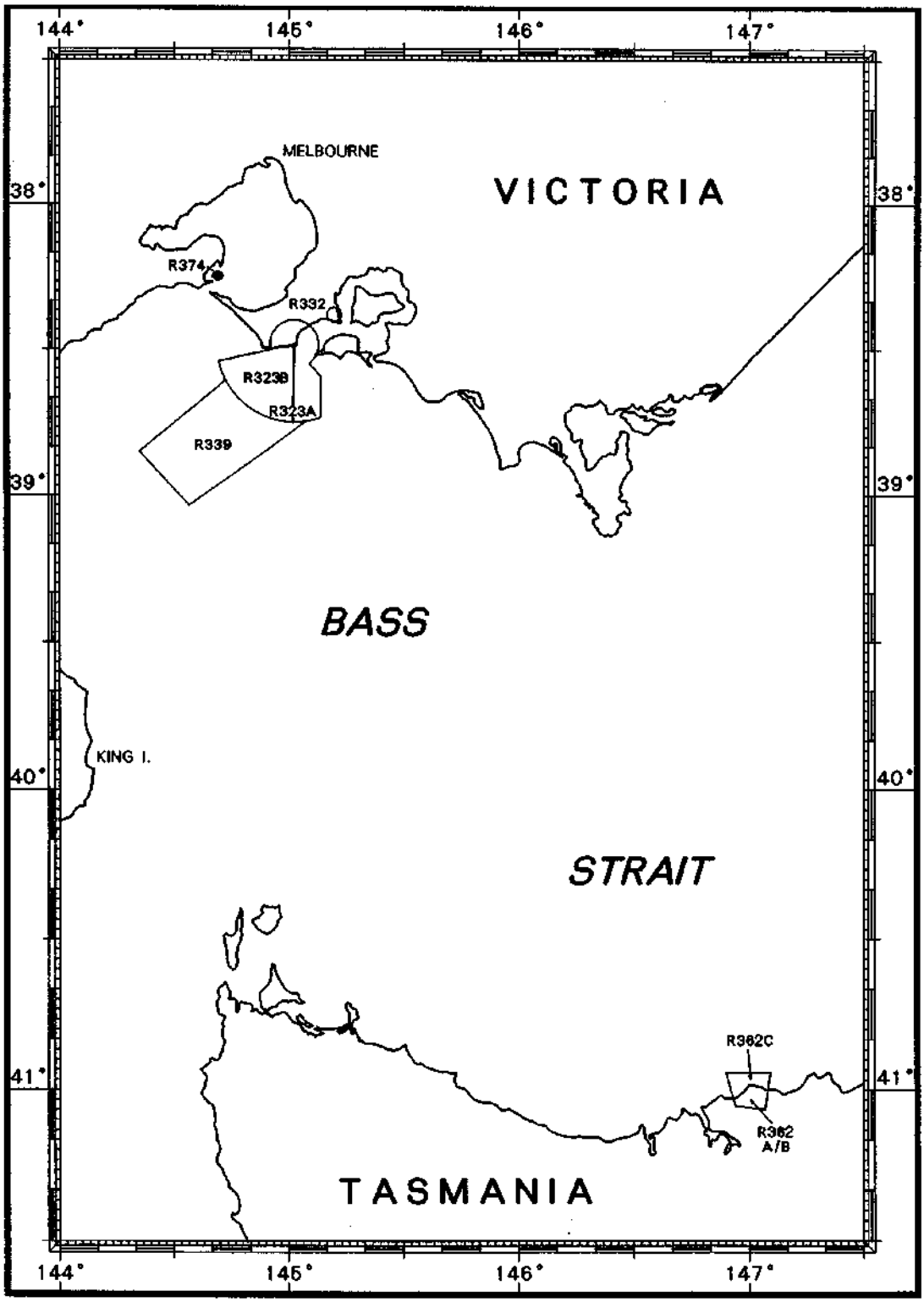


Chartlet No. 11

Maritime Claims

The maritime territorial claims of Australia are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* Claims straight baselines. Claims Anxious Bay, Rivoli Bay, Encounter Bay, and Lacepede Bay as historic waters.

Maritime Boundary Disputes

In 1999, a partial maritime boundary between Australia and East Timor was established over part of the Timor Gap, but an unreconciled area where Australia was granted a 90 per cent share of exploited gas reserves has hampered the creation of a maritime boundary with Indonesia.

Indonesian groups have challenged Australia's claim to Ashmore Reef (12˚15'S., 123˚03'E.).

Pilotage

New South Wales

Pilotage is compulsory for New South Wales. The pilotage service is under the control of the Maritime Services Board of New South Wales.

Queensland

Pilotage into Queensland ports is compulsory. It is under the control of the Queensland Department of Harbors and Marine.

Queensland Coast and Torres Strait Pilots are licensed only for coastal pilotage.

Vessels that are exempted in New South Wales and Queensland include all naval vessels, interstate vessels, or coasters, whether under power or sail, and being under 50 nrt.

Regulations are in force in Australian waters concerning use and design of pilot ladders and mechanical pilot hoists.

The waters containing Torres Strait, Great Northeast Channel, and the Inner Route are of a special character, detailed in Pub. 127, Sailing Directions (Enroute) East Coast of Australia and New Zealand.

In recognition of that special character, the IMO recommends that vessels 100m in length or over, and all loaded oil, chemical, or liquefied gas carriers, irrespective of size, use the pilots available from the Queensland Coast and Torres Strait Pilot Service while navigating within the Torres Strait and along the Inner Route between Booby Island (10˚36'S., 141˚55'E.) and latitude 16˚40'S, or through Great Northeast Channel, or Hydrographer's Passage.

The Australian government recommends that vessels not familiar with other areas of the Great Barrier Reef, or the entrances to Palm Passage and Grafton Passage, also use the Queensland Coast and Torres Strait Pilot Service.

Pollution

Insurance Requirements

All vessels 400 gross tons and over carrying oil as cargo or bunkers must have a "relevant insurance certificate" when visiting an Australian port. This requirement does not apply to oil tankers already required to have insurance under the International Convention on Civil Liability for Oil Pollution Damage 1992. The "relevant insurance certificate" must contain the following information:

1. Vessel name.
2. Owner's name.
3. Name and business address of insurance provider.
4. Commencement date of insurance coverage.
5. Amount of coverage provided.

Further information on these requirements can be obtained from Environment Protection Standards of the Australian Maritime Safety Authority (AMSA), as follows:

1. Telephone: 02-6279-5007
2. E-mail: Using the contact form found at the AMSA web address listed below:

http://www.amsa.gov.au/Contact_Us

Pollution Reports

All vessels navigating within Australian territorial waters must report incidents involving the following:

1. A discharge or probable discharge of oil, or noxious liquid substances in bulk, resulting from damage to the vessel or its equipment, or for the purposes of securing the safety of a vessel or saving life at sea **(Harmful Substances (HS) Report)**.
2. A discharge or probable discharge of harmful substances in packaged form, including those of freight containers, portable tanks, road and rail vehicles, and shipborne barges **(Marine Pollutants (MP) Report)**.
3. Damage, failure, or breakdown of a vessel 15m long or greater which affects the safety of the vessel or results in the impairment of the safety of navigation.
4. A discharge of oil or noxious liquid substances in excess of that permitted under the current MARPOL Convention.

Information required in the HS Report and the MP Report is given in the accompanying table.

Australia—Pollution Reports

Identifier	Content	HS*	MP*
A	Name, call sign/ship station identifier, and flag	X	X
B	Date and time (UTC) of event	X	X

Australia—Pollution Reports			
Iden-tifier	**Content**	**HS***	**MP***
C	Latitude/Longitude or	X	X
D	True bearing and distance		
E	True course	X	
F	Speed in knots and tenths of knots	X	
L	Intended track	X	
M	Radio communications (full names of stations)	X	X
N	Time of next report	X	
P	Pollution details, as described in the Key below	X[1]	X[2]
Q	Ship information, as described in the Key below	X[3]	X[3]
R	Dangerous cargo lost overboard, as described in the Key below	X[4]	X[5]
S	Weather conditions	X	X
T	Name, address, telex, and telephone number of ship's owner and representative	X	X
U	Vessel size and type	X	X
X	Remarks	X[6]	X[6]

Key	
*	Sections of the reporting format which are inappropriate may be omitted from the report.
X	Required information.
X[1]	This information is required in the event of probable discharge. The following details should be included: 1 Type of oil or the correct technical name(s) of the noxious liquid substance on board. 2 UN number(s). 3 Pollution category (A, B, C, or D) for noxious liquid substances. 4 Name(s) of manufacturer(s) of substances, if appropriate, when known, or consignee(s) or consignor(s). 5 Quantity.
X[2]	This information is required in the event of probable discharge. The following details should be included: 1 Correct technical name(s) of cargo. 2 UN number(s). 3 IMO hazard class(es). 4 Name(s) of manufacturer(s), when known, or consignee(s) or consignor(s). 5 Types of packages, including identification marks. Specify whether portable tanks or tank vehicles, whether vehicle or freight container, or other transport unit containing packages. Include official registration marks and numbers assigned to the unit. 6 An estimate of the quantity and likely condition of the cargo. Information not immediately available should be sent in a supplementary message or messages.
X[3]	The following details should be included: 1 Condition of the vessel. 2 Ability to transfer cargo/ballast/fuel.

Key	
X^4	The following details should be included: 1 Type of oil or the correct technical name(s) of the noxious liquid discharged into the sea. 2 UN number(s). 3 Pollution category (A, B, C, or D) for noxious liquid substances. 4 Name(s) of manufacturer(s) of substances, if appropriate, when known, or consignee(s) or consignor(s). 5 An estimate of the quantity of the substances. 6 Whether lost substances floated or sank. 7 Whether loss is continuing. 8 Cause of loss. 9 Estimate of the movement of the discharge or lost substances, giving current position, if known. 10 Estimate of the surface area of the spill, if possible.
X^5	The following details should be included: 1 Correct technical name(s) of cargo. 2 UN number(s). 3 IMO hazard class(es). 4 Name(s) of manufacturer(s), when known, or consignee(s) or consignor(s). 5 Types of packages, including identification marks. Specify whether portable tanks or tank vehicles, whether vehicle or freight container, or other transport unit containing packages. Include official registration marks and numbers assigned to the unit. 6 An estimate of the quantity and likely condition of the cargo. 7 Whether lost cargo floated or sank. 8 Whether loss is continuing. 9 Cause of loss.
X^6	The following details should be included: 1 Action being taken with regard to the discharge and the movement of the vessel. 2 Assistance or salvage efforts which have been requested or which have been provided by others. 3 The master of an assisting or salvaging vessel should report the particulars of the action undertaken or planned.

The pollution report (POLREP) should be sent to the Manager, Marine Environment Protection Standards in the Australian Maritime Safety Authority (AMSA), Canberra through AusSAR. AusSAR can be contacted 24 hours, as follows:

1. Telephone:+61-2-6230-6811
   1-800-641-792 (toll free)
2. Fax: +61-2-6230-6868
3. Telex: 7162349 (computer connected)
4. E-mail: rccaus@amsa.gov.au

Regulations

Ship Pre-Arrival Report

Foreign flag vessels are required to submit pre-arrival information using the Australian Customs Service's Form 13 (Ship Pre-Arrival Report); this information should be sent at least 96 hours prior to arrival or, as follows:

1. If the duration of the voyage from the previous port is less than 96 hours, the report should be submitted 72 hours in advance.
2. If the duration of the voyage from the previous port is less than 72 hours, the report should be submitted 48 hours in advance.
3. If the duration of the voyage from the previous port is less than 48 hours, the report should be submitted 24 hours in advance.
4. If the duration of the voyage from the previous port is less than 24 hours, the report should be submitted 12 hours in advance.

The Ship Pre-Arrival Report contains security related fields requiring the following information:

1. Details of the International Ship Security Certificate (ISSC).
2. The current security level at which the ship is currently operating.
3. The last ten ports of call, with departure dates, and the security level at each port.
4. When the security level at any of these ports is different from that of the ship, details of any special/specific security measures implemented by the ship.
5. Details of any ship-to-ship activity within the last ten ports of call.
6. Next four ports of call, including Australian ports, where known.

Australian Customs Service's Form 13 (Ship Pre-Arrival Report) can be obtained from the Australian Customs Service web site, as follows:

Australia Customs Home Page

http://www.customs.gov.au

New South Wales

Vessels on arrival at any port in New South Wales should obtain a copy of the port regulations.

Regulations have been made for navigation of the navigable rivers in the area of New South Wales.

A vessel approaching any dredge, or other vessel employed on any works in the river, is to reduce speed to a rate not exceeding 4 knots over the ground when at least 275m away and so continue until the vessel has passed 45m beyond the dredge or other vessel.

All vessels passing such dredges or other vessel must pass on the side indicated by the signals from the dredge.

When a vessel is being docked or undocked in the rivers, a red flag is displayed at the entrance to the dock. All vessels approaching must proceed at dead slow speed when at least 275m off the flag, and so continue until 45m past it.

A vessel approaching a ferry shall, when between 0.5 mile and 0.25 mile from the ferry, sound a prolonged warning blast on her whistle or siren, and slow down. If the ferry is underway the vessel should pass astern of or behind the ferry, and if practicable, stop engines when passing over the wire of the ferry to avoid fouling it.

Ferries are forbidden to leave the shore after a vessel has sounded a prolonged warning blast until the vessel has passed.

Ferries working on wires or chains crossing navigable rivers exhibit a red light over a green light visible all-round the horizon, and a white light in the forepart.

Speed limits between 4 and 8 knots are in force on many rivers and lakes in New South Wales.

Special regulations are in force regarding the carrying, loading, and discharging of explosives.

The information below has been extracted from the regulations made under the Explosives Act, 1905 (New South Wales).

At ports in New South Wales, vessels with explosives on board, other than ships' stores not exceeding 50 pounds in weight, must furnish a full report of the same to the local authorities immediately on arrival in port.

At Newcastle, report to the harbormaster, at any other port or place, report to the local police inspector, or if there is no inspector, to the principal officer of Customs at such port or place.

Vessels having explosives on board must anchor in the anchorages set apart for them.

Queensland

Vessels on arrival at any port in Queensland should obtain a copy of the port regulations.

The following sound signals are in force in Queensland rivers:

1. The master of every powered vessel shall, immediately before casting off from any wharf or jetty in any river in Queensland, signify his purpose to do so by a prolonged blast on the whistle or siren.

2. The master of every powered vessel proceeding up any river in Queensland and approaching any bend shall sound on the whistle or siren a short blast followed by a long blast. The master of any vessel proceeding down any river and approaching any bend shall sound on the whistle or siren a long blast followed by a short blast.

3. When a powered vessel underway in any river in Queensland is about to turn around, the master shall signify such purpose by four short blasts on the whistle or siren followed, after a short interval, if turning with its head to starboard, by one short blast and, if with its head to port, by two short blasts; and, while such vessel is turning shall repeat such signal to any approaching vessel; the master of the latter vessel shall take action to avoid collision. Power-driven ferries operating across Queensland rivers, exhibit a green light visible all-round the horizon, at each end of the vessel.

4. In the Brisbane River, when such vessels are underway, they exhibit an additional red flashing light visible all-round the horizon, from a position midway between the center of the ferry and the forward green light.

Speed.—Every powered vessel when underway within the limits of any port in Queensland, shall be navigated at such reduced speed as to not endanger the safety of any other vessel or vessels or moorings, or cause damage thereto, or to the banks of any river, or to any wharf, jetty, dredged channel, beacon, buoy, or other harbor improvement.

When passing a berthed container vessel with the portainer boom in the lowered position, vessels should approach at the minimum possible speed and if possible, stop their engines when passing.

Vessels with drafts over 2m must not exceed the prescribed speed limits for the various ports.

Customs.—The Collector of Customs has appointed certain stations for the boarding or landing of customs officers at the various ports in Queensland.

The signal to be shown for stopping vessels at such stations shall be "SQ" of the International Code of Signals, or a red light at night.

Explosives.—Vessels carrying explosives in excess of 20 pounds are forbidden to proceed beyond certain points at ports in Queensland. For details, see Pub. 127, Sailing Directions (Enroute) East Coast of Australia and New Zealand.

Victoria

Ships with explosives on board, when entering any port of Victoria, shall specially report the same to the pilot and at the time of making entry at the customhouse.

All vessels entering, or in the ports of Victoria, shall hoist a red burgee at the main. Explosives may be landed only between sunrise and sunset.

No boat shall be used for the conveyance of explosives, either to or from any ship or wharf or other place, unless duly licensed for that purpose, and no explosives shall be landed or conveyed from the ship until notice has been given to the water police (if there are any) at the port place where the ship shall lie, in sufficient time to enable the police to give such directions as may be necessary to prevent danger.

Boats licensed to convey explosives are subject to all the regulations for the management of hulks containing explosives, and no boat with explosives on board shall be towed by a high-pressure open-decked steamboat whose furnaces are exposed, or by any steamer with less towline than 20m in length, and no steamer shall approach within 0.1 mile of any hulk, lighter, or boat containing explosives, unless the explosives are stowed in the hold and the hatches are closed and covered with tarpaulin.

No explosives shall be removed from any ship for conveyance to the magazine except between sunrise and sunset, and explosives shall only be permitted to be deposited in the magazine between those hours.

Vessels receiving explosives must be anchored beyond the limits within which ships having explosives on board are not permitted to anchor. Explosives may only be put on board between sunrise and sunset.

No vessel having explosives on board arriving in or off any of the ports of Victoria shall go alongside any wharf or jetty within these ports or be at anchor otherwise than as directed for each port.

Quarantine

The Australian Quarantine and Inspection Service (AQIS) currently requires all vessels arriving in Australia from overseas, or who have been in contact with overseas vessels or sea installations, to submit Form 006—Quarantine Pre-Arrival Report (QPAR) to AQIS. Copies of the report can be accessed from the AQIS web site.

AQIS Seaports Home Page

http://www.aqis.gov.au/shipping

The QPAR details the condition of the vessel, including human health, cargo, and ballast water management. The QPAR should be sent to AQIS no more than 48 hours and no less than 12 hours prior to arrival in Australia. This will allow efficient processing of the QPAR and avoid any disruption to the vessel's arrival. Vessels that do not submit a QPAR will be met by a quarantine officer on or shortly after arrival to complete the quarantine formalities. This will cause a delay to the vessel and additional AQIS charges.

Vessels require written permission to discharge any ballast water in Australian ports or waters. This permission may only be granted after the vessel has properly submitted a QPAR to AQIS.

Vessel masters will also be required to complete the AQIS Ballast Water Log. Copies of the form can be accessed from the AQIS web site.

Vessels intending to visit a non-proclaimed port, defined a a remote port with no active AQIS presence, must obtain prior permission to do so by submitting AQIS Form 20AA at least ten days prior to arrival at the port. Copies of the form can be accessed from the AQIS web site.

Questions concerning the QPAR and the Ballast Water Log can be directed to the following e-mail addresses:

AQIS Seaports Program Manager:	seaports@aqis.gov.au
Ballast Water Advisor:	ballastwater@aqis.gov.au

Designated Shipping Area (DSA)

The *Great Barrier Reef Marine Park Zoning Plan 2003* is in effect in the Great Barrier Reef Marine Park. The zoning plan describes the purposes for which each zone may be used or entered without permission and the purposes for which a zone may be used or entered only with the written permission of the Great Barrier Reef Marine Park Authority.

A DSA is established through the Inner Route, recognized passages, and all port approaches in the Great Barrier Reef Marine Park. The DSA will accommodate vessels using accepted or normally-used routes.

Shipping agents, vessel owners, vessel operators, and ship masters are advised to obtain a copy of the *Great Barrier Reef Marine Park Zoning Plan 2003* from the Great Barrier Reef Marine Park Authority, as follows:

Telephone:	61-7-4750-0700
Web site:	http://www.gbrmpa.gov.au

The Great Barrier Reef Marine Park Authority web site also includes information on Zoning Maps, Designated Shipping Areas, and Particularly Sensitive Sea Areas.

Vessel navigation requirements within the limits of the DSA or the General Use Zones of the Greater Barrier Reef Marine Park are given in the accompanying table. Vessels seeking to deviate from the DSA or General Use Zones, other than for the exceptions described below, must seek permission from the Great Barrier Reef Marine Park Authority.

Vessel Navigation Requirements—Great Barrier Reef National Marine Park

Vessels required to navigate within the limits of the DSA or the General Use Zones of the Greater Barrier Reef Marine Park	Exempt vessels
Vessels 50m long and over.	A vessel of the Australian Defense Force.
Oil tankers, within the meaning given by the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, regardless of its length.	A vessel of the armed forces of another country, if the vessel is in Australian waters with the consent of Australia.
A chemical carrier or liquefied gas carrier, regardless of its length.	A super-yacht (a vessel more than 50m long used for recreational purposes).
A vessel to which the INF Code applies, regardless of its length.	
A vessel adapted to carry oil or chemicals in bulk in cargo spaces.	

Vessel Navigation Requirements—Great Barrier Reef National Marine Park	
Vessels required to navigate within the limits of the DSA or the General Use Zones of the Greater Barrier Reef Marine Park	**Exempt vessels**
A vessel engaged in towing or pushing another vessel or vessels if any of the above descriptions apply to the towed or pushed vessel or if the total length of the tow, measured from the stern of the towing vessel to the after end of the tow is greater than 150m.	

Vessels normally required to navigate within the DSA or the General Use Zones may deviate from these requirements in the following emergency situations:

1. To investigate and respond to an emergency alert.
2. To save human life or avoid the risk of injury to a person.
3. To locate or secure the safety of an aircraft, vessel, or structure that is, or may be, endangered by the stress of weather, navigational hazards, or operational hazards.
4. To carry out emergency repairs to a navigational aid.
5. To deal with a threat of pollution to the marine environment under a Commonwealth law or a national emergency response arrangement in which the Great Barrier Reef Marine Park Authority participates.
6. Under Commonwealth law, to remove or salvage a vessel; aircraft; or section of aircraft, vessel, or other wreck that is wrecked, stranded, sunk, or abandoned and poses a threat to the marine environment or safety.

Single Hull Oil Tankers (SHOT)

Australia is in the process of phasing in a ban on all SHOT by 2010. Further information can be found in Australian Maritime Safety Organization (AMSA) Marine Notice 13/2004, at the AMSA website, as follows:

AMSA Marine Notices 2004

http://www.amsa.gov.au/shipping_safety/Marine_Notices/2004/index.asp

Area to be Avoided

The area in the vicinity of the Capricorn Group (23˚20'S., 152˚00'E.) and the Bunker Group (23˚50'S., 152˚20'E.) is an IMO-adopted Area to be Avoided. To avoid the risk of pollution and damage to the environment, all vessels carrying dangerous or toxic cargo, as well as any vessel exceeding 500 grt, should avoid the area.

Search and Rescue

AusSAR, a unit of the Australian Maritime Safety Authority (AMSA), has assumed responsibility for both maritime and aviation search and rescue operations.

AMSA Search and Rescue

http://www.amsa.gov.au/search_and_rescue

When a ship or an aircraft is in distress in the Australian Search and Rescue Region (SRR), the boundaries of which are identical to the boundaries of the AUSREP area, assistance may be given by vessels in the vicinity and/or the following authorities:

1. Australian Maritime Safety Authority (AMSA) through AusSAR, specifically the Rescue Coordination Center Australia (RCC Australia), is responsible for search and rescue for civil aircraft, for merchant ships outside port limits, and for small craft beyond the capacity of regional SAR resources. RCC Australia, located in Canberra, coordinates aircraft and surface vessels involved in search and rescue operations within the Australian SRR and can be contacted by e-mail, as follows:

rccaus@amsa.gov.au

RCC Australia is also the Australian Mission Control Center (AUMCC) for the COSPAS/SARSAT International Satellite System used for the detection of distress beacons. It is manned continuously and may be contacted through the AMSA HF DSC network or via INMARSAT.

2. The AMSA HF DSC Network, which has stations located in Wiluna (Western Australia) and Charleville (Queensland), is controlled from RCC Australia and will respond to initial calls on HF DSC. Vessels wishing to communicate with the HF DSC network (station identifier: RCC Australia; call sign: VIC; MMSI number 005030001) are required to initiate a DSC call on the International Distress Alerting Frequencies (4207.5 kHz, 6312.0 kHz, 8414.5 kHz, 12577.0 kHz, and 16804.5 kHz). The INMARSAT Land Earth Station (LES) at Perth provides communications through both the Indian Ocean Region (IOR) and Pacific Ocean Region (POR) satellites. Details of Australian Maritime Communications Stations (MCS) can be found in relevant International Telecommunications Union (ITU) and ALRS publications.
3. The Royal Australian Air Force (RAAF) is responsible for SAR operations involving Australian and foreign military land-based aircraft, but may provide assistance to other SAR authorities.
4. The Royal Australian Navy (RAN) is responsible for SAR in respect to naval ships and aircraft.
5. State and Territory Police Forces are responsible for SAR operations involving fishing vessels and pleasure craft within the limitations of their SAR resources.

Ships fitted with suitable radio equipment can make a significant contribution to safety by guarding an appropriate

International distress frequency for as long as practicable, whether or not required to do so by regulations.

All Australian port radio stations use VHF channel 67 to supplement VHF channel 16 as a distress, safety, and calling frequency.

Masters of vessels operating within the Australian Search and Rescue Region (SRR) are advised that an Australian Government protocol for ships assisting people in distress at sea is in place. This protocol sets out important principles that must be recognized to ensure a smooth post-rescue effort while minimizing the disruption to the intended voyage of the rescuing vessel. It provides guidance to ships' masters on the processes to be followed in relation to landing people who have been rescued at sea. Copies of the protocol can be obtained from the web site listed below.

Protocol for Commercial Shipping Rescuing Persons at Sea in or Adjacent to the Australian Search and Rescue Region

http://www.dotars.gov.au/transinfra/sea_rescue.aspx

The protocol requires the master of a vessel participating in a rescue that is being coordinated by RCC Australia to provide certain information to RCC Australia. Reports can be made 24 hours, as follows:

AMSA HF DSC Network:	MMSI 00503001
Toll-free:	1-800-641-92
Telephone:	+61-2-6230-6811
Facsimile:	+61-2-6230-6868
E-mail	rccaus@amsa.gov.au

Signals

Port Control Signals

When a port in Australia is closed to navigation, the following signals are shown:

1. By day, a black cone, point up, between two black balls, vertically disposed.
2. At night, a green light between two red lights, vertically disposed at the signal masthead.

Note.—When these signals are shown, no other masthead signals will be shown.

Caution.—Some ports have their own signals. See the appropriate Sailing Directions (Enroute) publication for the port concerned.

Port Priority Signals

In certain Australian ports, vessels of 35m or more in length (less in some ports), when navigating within the pilotage waters of the port and requiring a priority or right-of-way over other vessels, may display the following:

1. By day, when berthing or unberthing, the flag signals as prescribed in the Port Authority By-laws.
2. At night, two lights mounted vertically, 2m apart, the upper being green and the lower being red.

Tide Signals

Tide Signals, shown from the masthead, refer to vertical movements of the tide only and are given in the accompanying table.

Tide Signals		
Tide	**Day signal**	**Night signal**
Flood tide	Black cone, point up	Green light
Ebb tide	Black ball	Red light
Slack water	Black cylinder	White light

Quarter Tide Signals.—When shown with other signals, they are displayed on the mast below the cross tree or the normal position of the crosstree. Quarter Tide Signals are not shown with Depth Signals. When considered sufficient by local authorities, only 1st Quarter and 3rd Quarter Signals will be shown to indicate 1st Half Tide and 2nd Half Tide. The signals are given in the accompanying tables.

Flood Tide Quarter Tide Signals		
Tide	**Day signal**	**Night signal**
1st Quarter	Black cone, point up	Green light
2nd Quarter	Black cone, point up over black cylinder	Green light over white light
3rd Quarter	Two black cones, points up, vertically disposed	Two green lights, vertically disposed
4th Quarter	Black cylinder over black cone, point up	White light over green light

Ebb Tide Quarter Tide Signals		
Tide	**Day signal**	**Night signal**
1st Quarter	Black ball	Red light
2nd Quarter	Black ball over black cylinder	Red light over white light
3rd Quarter	Two black balls, vertically disposed	Two red lights, vertically disposed
4th Quarter	Black cylinder over black ball	White light over red light

Depth Signals

Depths signals are shown at the yardarm, with whole meter signals being shown at the yardarm opposite the decimal signals. The signals indicate the depth, in meters, above local port datum, which may differ from chart datum. Depth Signals, which are not displayed with Quarter Tide Signals, are given in the accompanying table.

Depth Signals		
Depth	**Day signal**	**Night signal**
0.25m	Black ball	Red light

Depth Signals		
Depth	**Day signal**	**Night signal**
0.50m	Black cone, point up	Green light
0.75m	Black cylinder	White light
1m	Black ball over black cone, point up	Red light over green light
2m	Black ball over black cylinder	Red light over white light
3m	Black cone, point up, over black ball	Green light over red light
4m	Black cone, point up, over black cylinder	Green light over white light
5m	Two black cones, points up, vertically disposed	Two green lights, vertically disposed
6m	Black cylinder over black ball	White light over red light
7m	Black cylinder over black cone, point up	White light over green light
8m	Two black cylinders, vertically disposed	Two white lights, vertically disposed

Datum Signals.—This signal indicates that the yardarm Depth Signals are to be subtracted. If shown at the same time as Navigational Signals, the Datum Signal will be shown 2m below the Tide Signals and the Navigational Signals.

The Datum Signals are, as follows:

1. Day signal—Black cylinder.
2. Night signal—White light.

Navigation Signals

Navigation signals, shown 2m below the masthead, are used to indicate navigational risk due to the state of the sea on a bar, or to strong tidal currents or freshets in a river. These signals are given in the accompanying table.

Navigation Signals		
Condition	**Day signal**	**Night signal**
Normal	No signal shown	
Moderate	Black cone, point down	Quick flashing green light
Dangerous	Two black cones, points down, vertically disposed	Quick flashing red light

Storm Warning Signals

When bad weather prevails or is expected, special reports and storm warnings are transmitted from the radio stations in the area affected. Daily weather reports and forecasts are also transmitted.

The following signals may be displayed when winds of force 8 or greater are expected:

1. Day signal—One black diamond.
2. Night signal—Two red lights, vertically disposed.

Weather reports and forecasts are posted up in post offices at various ports in Australia.

Within Queensland, warnings of tropical cyclones are sent by the Bureau of Meteorology, Brisbane, by telegram daily (including Sundays) to coastal radio stations.

In Queensland, a red triangular flag is displayed when a tropical cyclone is expected; at night, this signal is illuminated. This signal is only used in Queensland.

Such warnings are also sent to postmasters, harbormasters, police, and general public broadcasting stations in and adjacent to areas likely to be affected. Coastal Radio Stations broadcast such warnings to all ships on receipt. The Bureau issues warnings at 6 hour intervals when a cyclone center is more than 150 miles from the coast. If less than 150 miles from the coast, additional warnings are issued.

For the information of vessels not fitted with a radio, a red pendant will be displayed at various ports and signal stations along the Queensland coast. (See Pub. 127, Sailing Directions (Enroute) East Coast of Australia and New Zealand).

This red pennant indicates that a storm warning message has been received, details of which may be obtained from the harbor officials or postmaster at any port or place where the signal is displayed; when it is displayed at a signal station or lighthouse, the details will be signaled, on demand; the reply to a demand for a storm warning message is made by the International Code, by day, and by light at night.

In addition, there are certain places where storm warning messages are available at the Post Office, but where no red pendent is displayed.

General Signals

General signals should be used by vessels in Australian ports. A vessel having pilotage exemption should display a white flag at the main or where it can best be seen.

The signals laid down in the International Code of Signals should be used by vessels having explosives on board or waiting for clearance from quarantine or requiring any of the following; pilot, customs, water, police, or medical assistance.

A vessel having inflammable cargo on board shall display at the masthead, by day, Flag “B” of the International Code of Signals, and by night will exhibit a red light, visible all-round the horizon.

A vessel swinging in a river or narrow channel should sound four short blasts on its whistle or siren, followed after a short interval by the appropriate sound signal to indicate its direction of movement.

Submarine Operating Areas

The entire Australian Economic Zone is a permanantly-established Australian submarine exercise area. Australian submarines may be encountered by day or at night while operating in any of the waters off the Australian coast. Under certain circumstances, warnings that submarines are exercising in specified areas may be broadcast by local coastal radio stations.

Australian escort vessels fly the International Code Group "NE2" to denote that submarines, which may be submerged or surfaced, are exercising in the vicinity. Vessels are cautioned to give a wide berth to any vessel flying this signal.

It must not be inferred from the above that submarines exercise only when in the company of escorting vessels.

A submarine submerged in an exercise area at a depth too great to show the periscope may show the following pyrotechnic or smoke candle signals:

1. White smoke candles (with flame), yellow smoke candles, or yellow and green pyro flares indicate the submarine's position in response to a request from a ship or aircraft or as required.
2. Red pyro flares (may be accompanied by smoke candles repeated as often as possible) indicate that the submarine is carrying out emergency surfacing procedure. Vessels should keep clear and must not stop their propellers. Vessels must also standby to render assistance.

If the red pyro flare signal is sighted and the submarine does not surface within 5 minutes, it should be assumed that the submarine is in distress and has sunk. An immediate attempt should be made to fix the position in which the signal was sighted.

White smoke candles burn for up to 15 minutes; they emit white smoke and flame and can be seen day and night. Caution is necessary as they can be easily confused with the smoke and flame of aircraft marine markers and floats.

Yellow smoke candles burn for about 5 minutes; they emit yellow smoke. They can be seen more easily in rough weather than the white smoke candles, but they cannot be seen at night.

Navigation Lights

Australian submarines have their masthead and side lights placed well forward and very low over the water in proportion to their length and tonnage. In particular, some submarines can only show a forward masthead light in calm confined waters. Other submarines may have the forward masthead light situated lower than the side lights. In addition, the main masthead light may be situated well forward of the midpoint of the submarine's length.

The stern light may be placed very low, and may, at times, be partially obscured by spray and wash. In some cases, the stern light will be well forward of the aft part of the submarine and will not give a true indication of the submarine's length. The stern lights are invariably situated lower than the side lights.

The aft anchor light of a nuclear submarine is mounted on the upper rudder which is some distance astern of the hull's surface waterline. Hence, care must be taken to avoid confusing the submarine with two separate vessels of less than 50m in length.

The overall arrangement of submarine lights is unusual and may well give the impression of markedly smaller and shorter vessels. Their vulnerability to collision when proceeding on the surface and the fact that some submarines are nuclear powered dictates particular caution when approaching such vessels.

Nearly all Australian submarines are fitted with an amber quick-flashing light situated 1 to 2m above the main steaming light. This additional light is for use as an aid to identification in narrow waters and areas of dense traffic. Australian submarines will normally exhibit this identification light under the above conditions and when entering or leaving a harbor at night.

Australian Collins class submarines exhibit a very quick flashing yellow identification light (120 flashes per minute). This identification light should not be confused with an air-cushioned vessel operating in a non-displacement mode, which displays the same light.

Sunken Submarine

A submarine which is bottomed and unable to surface will try to indicate its position by firing candles giving off yellow or white smoke, either on the approach of surface vessels or at regular intervals. Yellow candles will be used as much as possible by day.

It may be impossible for a submarine to fire smoke candles. Correspondingly, a partially-flooded submarine may have only a certain number of smoke candles available and searching ships should not therefore expect many to appear.

Since oil slicks or debris may be the only indication of the presence or whereabouts of the sunken submarine, it is vitally important that surface ships refrain from discharging anything which might appear to have come from a submarine while they are in the probability area. Searching ships and aircraft can waste many valuable hours in investigating these false contacts.

Some Australian submarine pyrotechnics can be fitted with message carriers. If a message has been attached, the pyrotechnic will be fitted with a dye marker, giving off a yellowish-green color on the surface. Such a pyrotechnic should be recovered as soon as it has finished burning.

Australian Collins class submarines are fitted with a Submarine Launched EPIRB (SERB), which will be described later in this section.

In any submarine accident, time is the most vital factor affecting the chances of rescue of survivors, and, as the sighting of an indicator buoy may be the first intimation that an accident has in fact occurred, it is vital that no time should be lost in taking action. The sighting of any beacon should at once be reported by the quickest available means to the Rescue Coordination Centre Australia, the Navy, or the police. However, if vessels are unable to establish communications without leaving the vicinity of the submarine, it should be borne in mind that the primary consideration should be for vessels to remain standing by to rescue survivors and not leave the scene of the accident. Every effort should be made to include in the report the serial number of the beacon; this number is affixed on top of the SERB.

At any time after a submarine accident, survivors may start attempting to escape. Current policy dictates that survivors will wait before escaping, as follows:

1. Until rescue vessels are known to be standing by.
2. Conditions inside the submarine deteriorate to such an extent that an escape must be attempted.

It should be noted that, in certain circumstances, the latter situation may not arise through lack of air supply until several days after the accident. However, if the submarine is badly damaged, survivors may have to make an escape attempt immediately. Any ship finding a SERB should not therefore leave the position but stand by well-clear ready to pick up survivors.

On arrival at the surface, crewmembers may be exhausted or ill, and, if circumstances permit, the presence of a boat already lowered is very desirable. Some crewmembers may require a recompression chamber. Therefore, it is the aim of the authorities to get such a chamber to the scene as soon as possible.

In order that those trapped in the submarine shall be made aware that help is at hand, naval vessels drop small charges into the sea which can be heard from inside the submarine. There is no objection to the use of small charges for this purpose, but it is vital that they are not dropped too close since crewmembers in the process of making ascents are particularly vulnerable to underwater explosions, and may easily receive fatal injuries. A distance of about 0.3 mile is considered to be safe.

If no small charges are available, the running of an echo sounder or the banging of the outer skin of the ship's hull with a hammer from a position below the waterline are likely to be heard in the submarine, and such banging and/or sounding should therefore be carried out at frequent intervals.

Submarine Emergency Radio Beacon (SERB)

The SERB is made of aluminum, colored orange, and is cylindrical in shape, with two whip aerials. The beacon is fitted with an automated transmitting unit, with a battery life of 48 hours, and operating on the following frequencies:

a. 406.025 MHz—Cospas/Sarsat.
b. 243 MHz—Military Air Guard.
c. 121.5 MHz—Civil Air Guard.

Submarine Launched Expendable Communications Buoy (ECB)

The ECB is a silver tube about 1.1m long and 0.1m in diameter. The aerial is kept above water by a flotation collar about 0.4m in diameter. This buoy is used for tactical communications between submarines and other warships/aircraft. It can, however, be fired in an emergency default mode, in which case it will transmit a SABRE tone on 243MHz Military Air Guard.

Time Zone

The Time Zone description for the E coast of Australia is KILO (-10). Daylight Savings Time (LIMA (-11)) is maintained, as follows:

1. Victoria, New South Wales, and the Australian Capital Territory—From the last Sunday in October until the beginning of April; the exact changeover date to start Daylight Savings Time should be obtained from local authorities.
2. Queensland and Whitsunday Island—Daylight Savings Time is not observed.
3. Tasmania—From the first Sunday in October until the beginning of April; the exact changeover date to start Daylight Savings Time should be obtained from local authorities.

The observed Standard Time for Lord Howe Island is 10 hours 30 minutes fast of UT(GMT). Daylight Savings Time is not observed.

The observed Standard Time for Norfolk Island is 11 hours 30 minutes fast of UT(GMT). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) off the SE coast of Australia are, as follows:

1. South of Wilsons Point in Bass Strait. (IMO adopted)
2. In Bass Strait. (IMO adopted)

U.S. Embassy

The U.S. Embassy is situated at Moonah Place, Yarralumla, Canberra, Australian Capital Territory 2600.

The mailing address is APO AP 96549.

U. S. Embassy Australia Home Page
http://canberra.usembassy.gov

Vessel Traffic Service

The Australian Ship Reporting System (AUSREP)

The Australian Ship Reporting System (AUSREP) is compulsory for Australian-registered commercial vessels and for foreign vessels on voyages between Australian ports. All other vessels are encouraged to participate when within the AUSREP area.

The objective of the AUSREP system is to contribute to the safety of life at sea by:

1. Limiting the time between the loss of a vessel and the initiation of SAR action, in cases where no distress signal is sent out.
2. Limiting the search area for a SAR action.
3. Providing up-to-date information on all shipping resources available in the area, in the event of SAR action.

The AUSREP area, and Australian SAR region, covers the coast of Australia, as well as the coast of Antarctica between 75˚E and 163˚E, and extends N to approximately 6˚S at its W limit and to 12˚S at its E limit. The limits are best seen in the accompanying graphic.

The system is operated by the Australian Maritime Safety Authority (AMSA) through AusSAR, specifically the Rescue Coordination Center Australia (RCC Australia).

Telephone:	AusSAR AUSREP	+61(0)2-6230-6880
	AusSAR Maritime	+61(0)2-6230-6811
Facsimile:	+61(0)2-6230-6868	
Address:	P.O. Box 2181 Canberra ACT 2601 Australia	
Internet:	http://www.amsa.gov.au/amsa/sar.htm	

The AUSREP/REEFREP Interface, a two-way automatic data exchange interface, has been implemented between the REEFREP Ship Reporting System and the existing AUSREP system. This will avoid the need for dual reporting by vessels when participating in the AUSREP and REEFREP systems and will enhance the information available in each system.

With the introduction of changes to REEFREP that came into effect in December 2004 and its move to a coastal Vessel

Traffic Service (VTS), the identifier REEFVTS has been adopted for the *Great Barrier Reef and Torres Strait Vessel Traffic Service*. REEFVTS consists of two major components:

1. REEFREP (the Great Barrier Reef and Torres Strait Ship Reporting System), a mandatory ship reporting system.
2. Traffic monitoring systems, including radar, AIS, and Automated Position Reporting via INMARSAT_C.

Further information about REEFREP and REEFVTS can be found in Pub. 127, Sailing Directions (Enroute) East Coast of Australia and New Zealand.

On departure from an Australian port or on entering the AUSREP area, the following procedures are applicable:

1. Masters are to send a Sailing Plan (SP) to RCC Australia.
2. A computerized plot is maintained of the vessel's estimated position.
3. Position updates can be done by either of the following methods:
   a. Masters may agree to their vessels being queried via INMARSAT-C which, when requested, will automatically send a PR. This is the prefered method of submitting a PR.
   b. Position Reports (PR) are sent to RCC Australia each day between 2200 UTC and 0800 UTC at the time that has been nominated by the vessel's master so that a report is received at least every 24 hours. Dates and times shall be in Coordinated Universal Time (UTC).
4. On arrival at the destination or on final departure from the AUSREP area, a Final Report (FR) should be sent to RCC Australia.
5. Should a vessel at any time be in a position more than 2 hours steaming from the position that would be predicted from the last SP or PR, a Deviation Report (DR) should be sent to the MRCC.
6. All dates and times used in AUSREP reports are to be in Coordinated Universal Time (UTC).

Sailing Plan (SP).—The SP is sent up to 24 hours prior to joining the AUSREP system, with the following exceptions:

1. At ports within the REEFREP area, the SP must be sent prior to departure.
2. At other Australian ports, the SP may be sent up to 2 hours after departure.
3. When entering the system from sea at an ocean boundary, the SP may be sent 24 hours prior to entering the area or up to 2 hours after crossing the boundary.

The SP contains information necessary to initiate a plot and give an outline of the intended passage. If a vessel does not sail within 2 hours of the time stated in the SP, then that SP must be canceled and a new one sent.

The AUSREP report format for an SP is given in the accompanying table.

Position Report (PR).—The PR is sent at the Date/Time of Next Report as listed in Field N of the Sailing Plan. These reports must be sent between 2200 UTC and 0800 UTC at the nominated daily reporting time until and including the day of arrival in, or departure from, the AUSREP area. The interval between PRs should not exceed 24 hours.

Masters are reminded that facsimile and e-mail submissions are not acceptable for AUSREP PRs. RCC Australia cannot keep a SAR watch for vessels that do not use GMDSS communications (INMARSAT or HF DSC) at sea. Where masters have nominated polling as the method of reporting, AUSREP PRs are sent automatically and regularly when the terminal is polled by RCC Australia.

The information contained in the PR will be used by RCC Australia to update the plot. The PR must reflect the position and course of the vessel at the designated reporting time. However, the speed should be the anticipated speed until the next report time.

The PR is normally automatically processed by RCC Australia, but may not be seen by an operator. If the PR contains important additional safety information that requires the immediate attention of the operator, the word "ALERT" should be placed in Format Field X of the PR. The word "ALERT" should be used only to identify important safety information for immediate action.

The ETA at port of destination or AUSREP area boundary should always be confirmed in the last PR of a passage. It may also be amended in any PR whenever the Master is aware of a revised ETA.

The AUSREP report format for a PR is given in the accompanying table.

Deviation Report (DR).—A DR must be sent to RCC Australia if a vessel, at any time, is in a position more than 2 hours steaming from that which would be predicted from the last SP or PR. A DR can also be sent when any other voyage details are altered.

Failure to send an appropriate DR may have a negative effect on SAR operations. If the vessel is in distress and has not sent out a distress message, the AUSREP procedures may result in RCC Australia initiating an air search to locate the vessel. The search aircraft will start looking in the area related to the vessel's route and speed as indicated in the SP and subsequent PRs. If the vessel has not submitted a DR when there is a change in route and speed, the search aircraft may be unable to find any survivors. It is in the vessel's best interest to keep RCC Australia up-to-date on all voyage details.

The AUSREP report format for a DR is given in the accompanying table.

Final Report (FR).—An FR is sent, as follows:

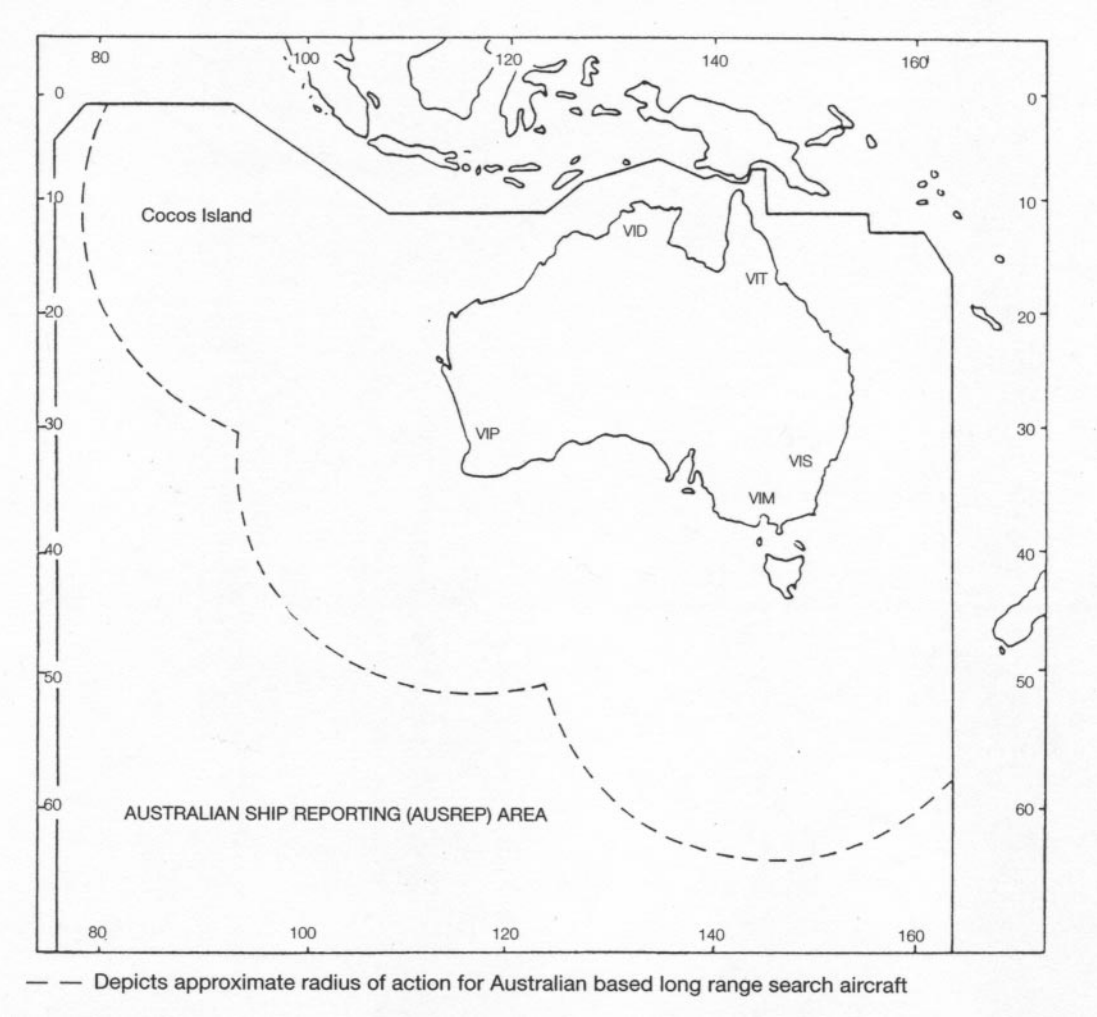
1. For vessels en route overseas and departing the AUSREP area, the FR should be send at the AUSREP boundary.
2. For vessels ending a voyage at an Australian port within the REEFREP SRS area, the FR must be sent at the last REEFREP reporting point
3. For vessels ending a voyage at any other Australian port, the FR can be sent within 2 hour's steaming of the port or pilot station. Under no circumstances should the FR be sent more than 2 hours prior to arrival.

As an alternative, the FR may be telephoned to RCC Australia immediately after berthing, but not more than 2 hours after arrival. If it is known that the vessel is to anchor or berth where telephone facilities are not available, the FR should be sent via the appropriate coast radio station or INMARSAT-C.

The AUSREP report format for an FR is given in the accompanying table.

Sending an AUSREP report.—AUSREP reports can be sent, as follows:

1. In an Australian port.—All reports should be made from the vessel directly to RCC Australia, in order to avoid delays that may be associated with using intermediate



agencies. Collect telephone calls, facsimile messages, or INMARSAT-C may be used to send an SP or an FR.

2. Via INMARSAT.—Reports must be addressed RCC Australia and sent via the Pacific Ocean Region (POR) or Indian Ocean Region (IOR) satellites to Xantic Land Earth Station (LES) Perth. These procedures apply only to AUSREP messages. Calls are free of charge when submitted within the AUSREP area.

INMARSAT-C fitted Ship Earth Stations will not be charged for messages sent via INMARSAT-C if these procedures are followed: Select Special Access Code (SAC) 43 through Xantic LES Perth only; Pacific Ocean (222) or Indian Ocean (322).

INMARSAT-A, B, or FLEET 77M fitted Ship Earth Stations will be charged for messages sent via INMARSAT-A, B, or FLEET 77M to RCC Australia.

While participating in AUSREP, vessels should ensure that their INMARSAT equipment remains active in the LOGIN mode at all times.

The preferred method of submitting an AUSREP report is via INMARSAT-C using the previously-described polling option as opposed to sending the reports manually.

3. Via the AMSA HF DSC Network.

4. Via REEFCENTRE.—Vessels transiting through the REEFREP area should send a PR via REEFCENTRE on the appropriate VHF channel, except, as follows:

a. Send the SP directly to RCC Australia prior to departure.

b. Send the PR directly to RCC Australia if the VHF channel is unavailable.

Polling.—The AMSA has introduced the use of INMARSAT-C polling as an option to replace the submission of PRs; polling is the preferred method of sending a PR to RCC Australia. Vessels can request RCC Australia to poll the vessel using INMARSAT-C by inserting the word “POLL” in Format Field N of the SP instead of nominating a Date/Time of Next Report. Polling involves RCC Australia sending a signal to the vessel’s INMARSAT-C terminal to prompt an automatic position report, which includes the vessel’s position, course, and speed. INMARSAT-C polling eliminates the need for a manual submission of the PR. Sailing Plans, Deviation Reports, and Final Reports must still be submitted as normal.

Non-reporting to AUSREP (NOREP).—In the case of a foreign vessel departing on an overseas voyage from an Australian port, if the Master does not intend to send AUSREP Position Reports, this fact must be indicated in the SP by the

inclusion of the word NOREP in place of the nominated daily reporting time in Field N; amplifying remarks may be included in Field X. Under this option, RCC Australia will not undertake SAR action unless specific information is received which indicates an air search is warranted. However, a NOREP vessel must still comply with the mandatory REEFREP reporting requirements when the vessel enters the REEFREP area.

Overdue AUSREP Reports.—AUSREP is a positive reporting system. If a PR or an FR is not received by RCC Australia within 2 hours of the expected time, action is taken to determine the vessel's location and confirm the safety of the crew. It should be noted that in some parts of the AUSREP area, the ability to conduct an air search may be restricted by aircraft range limitations.

To avoid unnecessary search action it is most important that vessels report at the nominated reporting time each day and send their FR when leaving the AUSREP area. If a vessel is unable to pass a PR or an FR, all attempts must be made to pass a message to this effect through another vessel, a harbor, or other shore authority either by VHF, signaling lantern, or emergency transmitter.

The action taken by RCC Australia if a report is not received as expected will depend on the prevailing circumstances, but will generally include the following:

1. Internal checks to establish if the vessel's report has been received by RCC Australia.
2. For INMARSAT-equipped vessels, an attempt to contact the vessel directly.
3. Attempts to contact the vessel via HF DSC to the vessel's MMSI number.
4. Extensive communication checks with Australian and overseas CRS, owners, agents, and other ships are carried out to trace the last sighting or contact with the vessel.

By the time 21 hours have elapsed, search planning will be in progress and details included in NAVAREA X and facsimile weather broadcasts. By the time the report is 24 hours overdue, positive SAR action will have been initiated to locate the vessel. It should be noted that resources available for an air search decrease with the distance from an Australian base and that the times may differ if the vessel is participating in INMARSAT-C polling.

Reports to AMVER.—While participating in AUSREP, masters may also wish their reports to be forwarded for inclusion in the AMVER system operated by the U.S. Coast Guard. This should be indicated by including the word "AMVER" in Format Field Y in each message.

For vessels participating in INMARSAT-C polling, if Format Field Y in an SP indicates that the reports are to be passed to AMVER, the AUSREP system will automatically forward PRs to AMVER.

An AMVER report will only be forwarded if a vessel is in the AUSREP area and is currently participating in the AUSREP system.

Reports to other reporting systems.—Reports from ships to other reporting systems (JASREP, etc.) are not forwarded by RCC Australia. Ship are requested to pass these reports direct.

AUSREP Reporting Format

Field	Meaning	Type of Report			
		SP	PR	DR	FR
A	Vessel name, call sign, and IMO number.	X	X	X	X
B	Date/time of position.		X	X	
C	Position (latitude and longitude).		X	X	
E	Course. If in REEFREP area, the name of the next reporting point, including any alternative route, if applicable, may be substituted.	R	X	A	
F	Speed (vessel's anticipated average speed, in knots and tenths of knots, until next report). If in REEFREP area, the ETA at the next reporting point may be substituted.	X/R	X	A	
G	Name of last non-Australian port of call.	A			
H	Date/time and point of entry into AUSREP area (point is either the Australian port of departure or the latitude/longitude of crossing the AUSREP area boundary).	X			
I	Next foreign (non-Australian) destination and ETA.	A		A	
J	1. Coastal pilotage (Yes/No). 2. Last name of pilot. 3. License number of pilot.	R		A	
K	Date/time and point of exit from the AUSREP area (the point is either the latitude/longitude of crossing the area boundary or the Australian port at which the vessel is to arrive).	X		A	X
L	1. Name of final reporting point for REEFREP SRS area, or 2. AUSREP route information (vessel's intended track—state rhumb line or coastal, great circle, or composite with limiting latitude). If both are provided, put the REEFREP information first and separate from the AUSREP information with a slash (/).	X/R		A	

AUSREP Reporting Format					
Field	Meaning	Type of Report			
		SP	PR	DR	FR
M	Coast radio maritime communication stations monitored (coast radio stations monitored, INMARSAT A and C numbers, and the MMSI/DSC number. if equipped).	X		A	
N	Date and time (UTC) of next report. (See **Note 1** below.)	X	X	X	
O	Draft, fore and aft, in meters and tenths of meters.	R			
P	1. Normal name of cargo. 2. Is cargo classified as hazardous (Yes/No)?	R		A	
Q	Defects or other limitations such as damage, failure, or breakdown affecting the safety of the vessel.	A		A	
R	Pollution (or reports of any seen).	A		A	
U	Vessel type, length (in meters), and gross tonnage.	R			
V	Medical personnel carried.	X			
X	Remarks. If choosing INMARSAT-C polling, include the make and type of INMARSAT-C terminal here.	A	A	A	X
Y	Request to relay a report to AMVER. (See **Note 2** below.)	A			

Key:

1. X—Required field.
2. R—Vessels transiting the REEFREP Ship Reporting System should also include these fields.
3. A—Include if appropriate.

Notes:

1. See text under **Non-reporting to AUSREP (NOREP)** for vessels electing not to participate in the AUSREP system. When polling is selected as the method of position reporting, the word “POLL” should be included in this section.
2. Place the word “AMVER” in Format Field Y; do not separate the letters in the word “AMVER” by spaces, as this may disrupt the computer processing. Masters should note that an AMVER report will only be forwarded if a vessel is in the AUSREP area and is currently participating in the AUSREP system.

BRUNEI

General

Brunei is located in Southeast Asia, bordering the South China Sea and Malaysia.

The climate is tropical marine, hot, humid, and rainy; nights are cool. there is no dry season.

The terrain consists of flat coastal plains which rise to mountains in the E and hilly lowlands in the W.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Bruneian Dollar, consisting of 100 cents.

Firing Areas

Binturan Firing Range and Bukit Agok Firing Range lie between the entrance to Sungai Tutong (4˚47'N., 114˚36'E.) and Tanjung Pungit, 19 miles NE.

Binturan Firing Range is bounded by lines joining the following positions:

a. 4˚51.6'N, 114˚41.0'E. (coast)
b. 4˚53.2'N, 114˚40.4'E. (Lighted Beacon B1)
c. 4˚56.1'N, 114˚45.0'E. (Lighted Beacon B2)
d. 4˚54.6'N, 114˚46.4'E. (coast)

Bukit Agok Firing Range is bounded by lines joining the following positions:

a. 4˚52.0'N, 114˚42.4'E. (coast)
b. 4˚58.2'N, 114˚38.0'E.
c. 5˚04.2'N, 114˚46.8'E.
d. 4˚58.2'N, 114˚51.4'E. (coast)

Flag of Brunei

Government

Brunei is a constitutional sultanate. The country is divided into four districts.

Brunei is governed by a Sultan. The Cabinet is appointed by the Sultan. It has been reported (2004) that an appointed Legislative Council may be reinstated.

The legal system is based on English common law.

The capital is Bandar Seri Begawan.

Holidays

The following holidays are observed:

January 1	New Year's Day
Chinese New Year	Variable
February 23	Independence Day
May 31	Armed Forces Day
July 15	Sultan's Birthday
December 25	Christmas Day

Islamic holidays, which are subject to the appearance of the moon, include Eid Al-Fitr (End of Ramadan), Eid Al-Adha (End of Pilgrimage), Hijrah (Islamic New Year), and the Prophet's Birthday.

Industries

The main industries are based on petroleum, petroleum refining, liquefied natural gas, and construction.

Languages

Malay is the official language, but English is often used for official purposes. Chinese is also common.

Navigational Information

Enroute Volume

Pub. 163, Sailing Directions (Enroute) Borneo, Jawa, Sulawesi, and Nusa Tenggara.

Maritime Claims

The maritime territorial claims of Brunei are, as follows:

Territorial Sea	12 miles.
Fisheries or Economic Zone	200 miles or the median Exclusive Economic Zone.

Maritime Boundary Disputes

In 2003, Malaysia and Brunei ceased oil and gas exploration in their offshore and deepwater sea beds. Negotiations are in progress over allocation of the disputed areas.

In 1984, Brunei established an exclusive economic fishing zone encompassing Louisa Reef (6˚20'N., 113˚14'E.) in the Spratly Islands but makes no public territorial claims to the offshore reefs. The 2002-issued *Declaration on the Conduct of Parties in the South China Sea* has eased tensions but falls short of a legally-binding code of conduct desired by several of the disputants (China, the Philippines, Taiwan, and Vietnam).

Regulations

It has been reported (2002) that communications can be established between the offshore oil structures/rigs/platforms and passing vessels on VHF channel 6 or 4400 kHz.

Search and Rescue

The Royal Brunei Armed Forces are responsible for coordinating search and rescue operations.

Time Zone

The Time Zone description is HOTEL (-8). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated on the Third Floor, Teck Guan Plaza, Jalan Sultan, Bandar Seri Begawan.

The mailing addresses are, as follows:

1. Brunei address—
   P.O. Box 2991
   Bandar Seri Begawan
   Brunei Darussalam BS 8675
2. U. S. address—
   PSC 470 (BSB)
   FPO AE 96507

U. S. Embassy Brunei Home Page
http://bandar.usembassy.gov

CAMBODIA

General

Cambodia is located in Southeastern Asia, bordering the Gulf of Thailand and Vietnam.

The climate is tropical. Monsoon season is from May to November. The dry season is from December to April with little seasonal temperature variation.

The terrain is mostly low. There are flat plains with mountains in the SW and N.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the riel, consisting of 100 sen.

Government

Flag of Cambodia

The government is a multiparty democracy under a constitutional monarchy. The country is divided into 20 provinces and four municipalities.

Cambodia is governed by a King chosen by the Royal Throne Council. The Prime Minister is named by the Chairman of the National Assembly and appointed by the King. The bicameral legislature consists of the directly-elected National Assembly, composed of 123 members serving 5-year terms, and the Senate, composed of two appointed and 59 indirectly-elected members serving 5-year terms.

The legal system is based on a mix of French law, royal decrees, and acts of the legislature, with influences of customary law and the remnants of communist legal theory.

The capital is Phnom Penh.

Holidays

The following holidays are observed:

January 1	New Year's Day
January 7	Victory Day
Chinese New Year	Variable (3 days)
March 8	Women's Day
Khmer New Year	Variable (3 days)
May 1	Labor Day
Vesak	Variable
Royal Ploughing Day	Variable
June 1	Children's Day
June 18	Queen's Birthday
September 24	Constitution and Coronation Day
Pchum Ben	Variable
October 23	Paris Peace Talks Anniversary
November 1	King's Birthday
November 9	Independence Day
November 26	Water Festival
December 10	Human Rights Day

Industries

The main industries are rice milling, fishing, wood and wood products, rubber, cement, and gem mining.

Languages

Khmer is the official language. French is also spoken.

Navigational Information

Enroute Volume

Pub. 161, Sailing Directions (Enroute) South China Sea and Gulf of Thailand.

Maritime Claims

The maritime territorial claims of Cambodia are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone **	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles.

* Claims straight baselines. Requires advance permission or notification for innocent passage of warships in the territorial sea.

** Also considered a Security Zone.

Maritime Boundary Disputes

The delineation of a maritime boundary with Vietnam is hampered by a dispute over offshore islands.

Pilotage

Pilotage is compulsory for all ocean-going vessels entering Cambodian waters.

Regulations

Special regulations exist for the approach and entry of foreign vessels into Cambodian waters.

In general, only those vessels with specific and prearranged permission should attempt to approach this coast.

Cambodian authorities board all vessels on arrival and the Quarantine flag is to be flown even if coming from another Cambodian port. In case of suspected disease on board, contact the local authorities by radio before arrival.

Deratting exemption certificates are recommended to be on board before arrival.

Search and Rescue

A Rescue Central Committee operates 24 hours at Pochentong Air Traffic Control Center. The Cambodian Ministry of Defense Navy is responsible for coordinating maritime search and rescue operations.

Kompong Saom-Ville Coast Radio Station (XUK) maintains a continuous listening watch for distress traffic on 500 kHz.

Time Zone

The Time Zone description is GOLF (-7). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at 16 Street 228, Phnom Penh. The mailing address is Box P, APO AP 96546.

U. S. Embassy Cambodia Home Page
http://phnompenh.usembassy.gov

CANADA

General

Canada is located in North America bordering the North Atlantic Ocean, the Arctic Ocean, and the Pacific Ocean. This publication covers the Pacific coast of Canada.

British Columbia, Canada's only province on the Pacific Ocean, lies between the States of Washington, Idaho, and Montana, on the S, and Alaska on the NW. It is bordered on the N by Yukon Territory and the Northwest Territories, and on the E by the Province of Alberta.

The coast trends about 550 miles NW, but the coastline is actually much longer because it is indented by numerous inlets, bays, and fjords. Glacier fed streams flow into the heads of Bute Inlet and Knight Inlet. The entire coast is fronted by mountains rising to over 3,048m.

Between this coastal range and the Rocky Mountains, 200 to 300 miles inland, are the fertile valleys of the Fraser River, the Columbia River, and their tributaries. Offshore are Vancouver Island, the Queen Charlotte Islands, and many smaller islands forming a large archipelago. Between the islands and the mainland a series of sheltered deep channels form the so-called "inner passage" or "inside passage." This inner passage affords a fair number of anchorages for vessels not wishing to navigate at night or in fog; it is lighted and buoyed at important places and is extensively used by local shipping.

Extending from this inner passage are numerous long and intricate inlets which penetrate into the mainland; most of them are narrow channels bordered by high mountains.

The hydrographic characteristics form a parallel to the topographic features. The continuation of steep inclines and narrow gorges below sea level has resulted in a system of narrow straits and deep soundings which characterizes the NW coast of North America from the Strait of Juan de Fuca to Cape Spencer, Alaska.

The climate is cool temperate, but mountain influences affect temperatures and rainfall varies considerably. The driest months occur in summer.

The terrain is mostly plains with mountains in the W and lowlands in the SE.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information. Caution is necessary, however, as privately-maintained aids, which may consist of non-IALA buoys and markings, may still be encountered in minor locations.

Cautions

Automatic Identification System

The Canadian Coast Guard's Marine Communications and Traffic Services (MCTS) is in the process (2003) of installing Automatic Identification System (AIS) equipment at selected radio sites associated at MCTS Centers (Comox) for testing purposes. The AIS equipment is in an operational test status. Mariners may observe an AIS ICON identifying a shore-based station on their AIS display.

Dumping of Chemical Agents

Historical reviews indicate that mustard and phosgene chemical warfare agents in various containers, including munitions, were dumped at the spoil ground centered on position 48˚15'N, 127˚00'W about 90 miles WSW of Cape Flattery, the S entrance point to the Strait of Juan de Fuca. Uncorroborated anecdotal information suggests that some of the warfare agents may have been dumped short of the intended location. Vessels should avoid anchoring or conducting sea bed operations in this vicinity.

Anyone with information concerning dumping of explosive or chemical warfare agents is urged to contact DND. Anecdotal information plays an important role in corroborating data and closing the information gaps that currently exist.

Further information can be found at the following web site:

Canada National Defence Warfare Agent Disposal Project Home Page
http://www.wadproject.forces.gc.ca

Currency

The official unit of currency is the Canadian dollar, consisting of 100 cents.

Firing Areas

British Columbia

Firing and bombing practices, and defense exercises, take place in a number of areas off the coast of Canada.

The principal types of practices carried out are:

1. Bombing Practice from Aircraft.
2. Air to Air, Air to Sea, or Ground Firing.—Air to Air is carried out by aircraft firing at a large white or red sleeve, a winged target, or flag towed by another aircraft moving on a steady course. Air to Sea, or Ground Firing are carried out from aircraft at towed or stationary targets on sea or land, the firing taking place to seaward in the case of those on land. All marine craft operating as range safety craft, target towers, or control launches for radio controlled targets will display, for identification purposes, while on or in the vicinity of the danger area, a large red flag at the masthead; a painted canvas strip, 1.8m by 0.9m with red and white checkers in 0.3m squares, on the fore deck or cabin roof.
3. Anti-aircraft Firing.—This may be from guns, missiles, or machine guns at a target towed by aircraft as in 2 above, at a pilotless target aircraft, or at balloons or kites. Practice may take place from shore batteries or ships. Warning signals, as a rule, are shown from shore batteries; ships fly a red flag.
4. Firing from Shore Batteries or Ships at Sea at Fixed or Floating Targets.—Warning signals usually shown as in 3 above.
5. At Remote-controlled Craft.—These craft are about 20m in length and carry "not under command" shapes and lights, as well as normal navigation lights. Exercises consisting of surface firing by ships, practice bombing, air to sea firing, and rocket firing will be carried out against these craft or targets towed by them.

A control craft will keep visual and radar watch up to approximately 8 miles and there will be cover from the air over a much greater range to ensure that other shipping will not be endangered.

Warning signals, when given, usually consists of red flags by day and fixed red or flashing red lights by night. The absence of any such signal cannot, however, be accepted as evidence that a practice area does not exist. Warning signals are shown from just before practice commences until it ceases.

Ships and aircraft carrying out night exercises may illuminate with bright red or orange flares.

A vessel may be aware of the existence of a practice area from local Notice to Mariners, or similar method of promulgation and by observing the warning signals or the practice.

The range authorities are responsible for ensuring that there should be no risk of damage from falling splinters, bullets, etc., to any vessel which may be in a practice area.

Areas are only in use intermittently or over limited periods of time. When it is intended that a firing practice and exercise area be used, this information will be promulgated by local Canadian Coast Guard Marine Radio Broadcasts and may also be advertised in local newspapers. Maritime Command vessels are informed by Navigational Warning Messages CANHYDROPAC.

Sea Areas—The Strait of Juan de Fuca

Area SJDF (Chartlet 1)—Sub-surface operations—An area bounded, as follows:

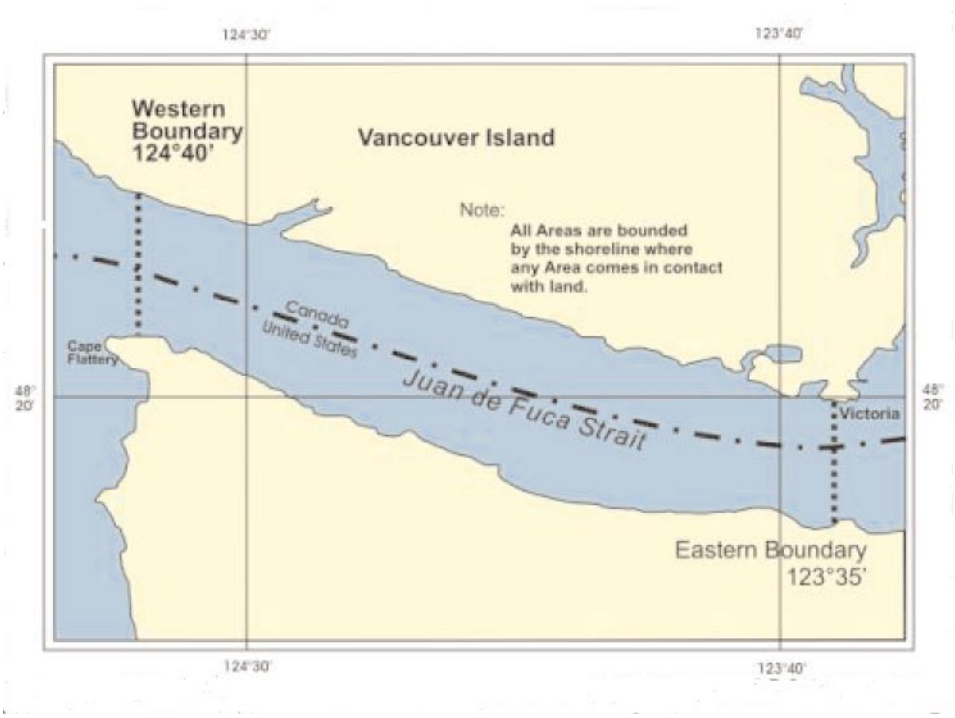
1. To the W—124˚40'W.
2. To the N—Vancouver Island.
3. To the E—123˚35'E.
4. To the S—Washington State.

WA (Esquimalt, B.C.) (Chartlet 2)—Pyrotechnics exercises and general air and surface operations—Area enclosed by a line joining the following positions:

a. 48˚20'36"N, 123˚31'34"W.
b. 48˚23'15"N, 123˚28'36"W.
c. 48˚25'50"N, 123˚26'45"W.
d. 48˚24'25"N, 123˚23'15"W.
e. 48˚15'21"N, 123˚23'15"W.
f. 48˚13'36"N, 123˚31'48"W.
g. 48˚20'00"N, 123˚34'30"W.

WB (Esquimalt, B.C.) (Chartlet 2)—Pyrotechnics exercises and general air and surface operations—Area enclosed by a line joining the following positions:

a. 48˚24'25"N, 123˚23'15"W.
b. 48˚23'47"N, 123˚18'12"W.
c. 48˚24'45"N, 123˚16'00"W.
d. 48˚18'30"N, 123˚13'28"W.
e. 48˚17'03"N, 123˚14'48"W.



Chartlet 1—Area SJDF

f. 48˚15'21"N, 123˚23'15"W.

WQ (Race Rocks, B.C.) (Chartlet 2)—Bentinck Island Demolition Range—A circle with radius of 1 mile centered on position 48˚18'42"N, 123˚32'36"W.

CYD102 (Esquimalt, B.C.) (Chartlet 3)**—**Airspace associated with Sea Areas WA, WB, and WQ and Land Areas WK and W.—Area enclosed by a line joining the following positions:

a. 48˚23'48"N, 123˚18'30"W.
b. 48˚18'34"N, 123˚13'40"W.
c. 48˚13'36"N, 123˚31'48"W.
d. 48˚20'00"N, 123˚34'30"W.
e. 48˚20'36"N, 123˚31'34"W.
f. 48˚23'21"N, 123˚28'36"W.
g. 48˚25'50"N, 123˚26'45"W.
h. 48˚24'25"N, 123˚23'15"W.

WH (The Strait of Juan de Fuca) (Chartlet 4)—Surface firing exercises—Area enclosed by a line joining the following positions:

a. 48˚22'00"N, 123˚55'00"W.
b. 48˚16'51"N, 123˚55'00"W.
c. 48˚17'54"N, 124˚01'00"W.
d. 48˚22'30"N, 124˚17'30"W.
e. 48˚28'18"N, 124˚17'30"W.

Sea Areas—Strait of Georgia

Area SOG (Chartlet 5)—Sub-surface operations—An area bounded, as follows:

1. To the W—Vancouver Island.
2. To the N—50˚10'N.
3. To the E—British Columbia mainland.
4. To the S—49˚00'N..

WC (Haro Strait, B.C.) (Chartlet 6)—General subsurface operations and torpedo firing exercises—Area enclosed by a line joining the following positions:

a. 48˚35'25"N, 123˚22'18"W.
b. 48˚35'25"N, 123˚21'48"W.
c. 48˚31'57"N, 123˚19'42"W.
d. 48˚31'57"N, 123˚21'59"W.

WD (Saanich Inlet, B.C.) (Chartlet 6)—General surface and subsurface operations—Area enclosed by a line joining the following positions:

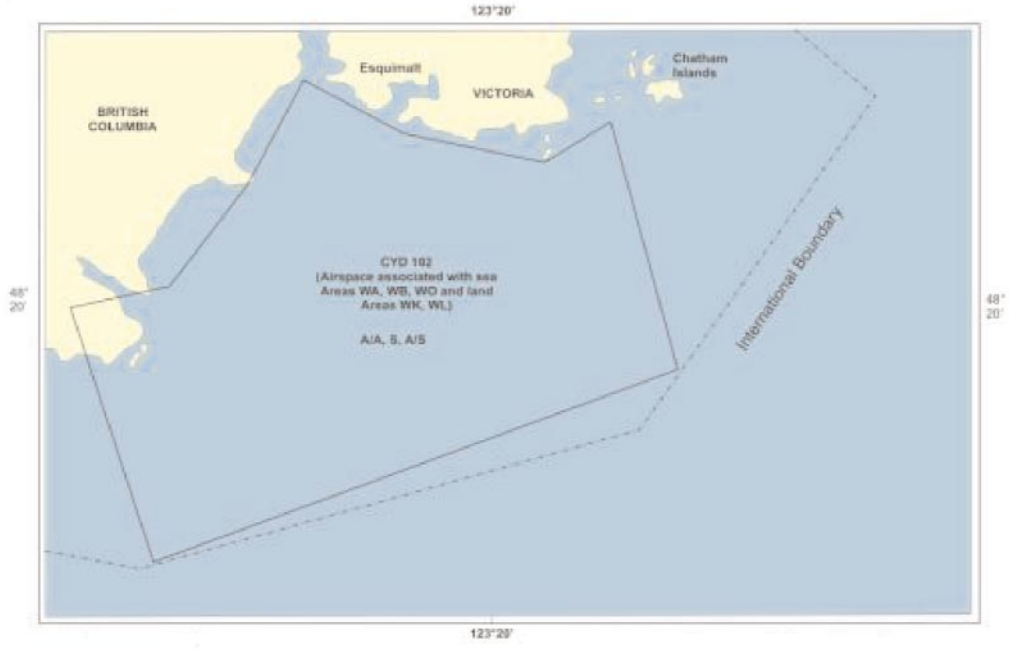
a. 48˚38'48"N, 123˚30'45"W.
b. 48˚38'48"N, 123˚29'15"W.
c. 48˚37'48"N, 123˚29'15"W.
d. 48˚37'48"N, 123˚30'45"W.

WE (Strait of Georgia, B.C.) (Chartlet 7)—General subsurface operations—Area enclosed by a line joining the following positions:

a. 49˚11'00"N, 123˚24'00"W.
b. 49˚17'00"N, 123˚43'00"W.
c. 49˚21'00"N, 123˚38'00"W.
d. 49˚16'00"N, 123˚20'00"W.

WF (Strait of Georgia, B.C.) (Chartlet 7)—General air, surface, and subsurface operations—Area enclosed by a line joining the following positions:

Chartlet 2—Area WA, Area WB, and Area WQ



Chartlet 3—Area CYD102

Chartlet 4—Area WH

a. 49˚19'18"N, 123˚43'30"W.
b. 49˚21'18"N, 124˚08'00"W.
c. 49˚28'42"N, 124˚08'00"W.
d. 49˚24'18"N, 123˚43'30"W.

WG (Strait of Georgia, B.C.) (Chartlet 7)—General air, surface, and subsurface operations and torpedo firing exercises—Area enclosed by a line joining the following positions:

a. 49˚21'28"N, 124˚09'30"W.
b. 49˚21'00"N, 123˚48'24"W.
c. 49˚14'50"N, 123˚48'24"W.
d. 49˚18'02"N, 124˚09'30"W.

Active Area Coordinates of Sea Area WG

a. 49˚21'25"N, 124˚07'45"W.
b. 49˚21'00"N, 123˚48'24"W.
c. 49˚14'50"N, 123˚48'24"W.
d. 49˚16'44"N, 124˚00'48"W.
e. 49˚19'21"N, 124˚07'45"W.

The portion of Sea Area WG enclosed by pecked lines, as shown in Chartlet 7, is an active area within which torpedo firings are conducted from 0700 to 1730 Monday to Saturday; during these times vessels will be required to clear the area on demand.

Sea Area WG constitutes a defense establishment as defined in the National Defense Act to which the Defense Controlled Access Area Regulations apply.

The following additional information is available:

1. VHF channel 21B (listen only).

2. Comox Coast Guard or Winchelsea Island Control on VHF channel 16 or Vancouver Traffic on VHF channel 11.

CYD107 (Strait of Georgia) (Chartlet 8)—Airspace associated with Sea Area WG—Area enclosed by a line joining the following positions:

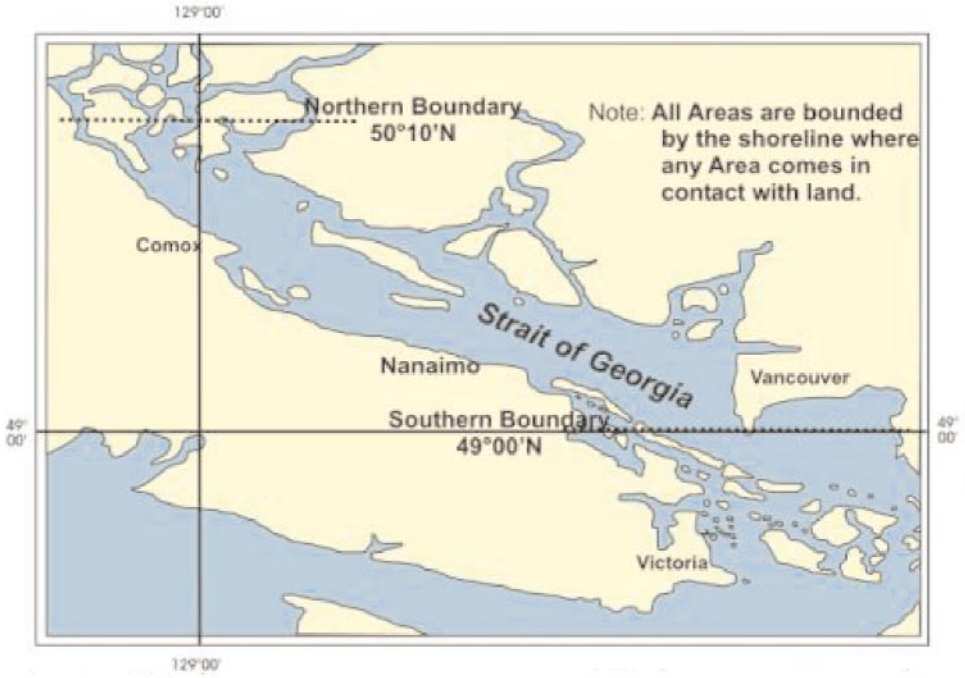
a. 49˚17'18"N, 124˚05'00"W.
b. 49˚15'54"N, 123˚56'00"W.
c. 49˚19'30"N, 123˚51'00"W.
d. 49˚25'30"N, 124˚12'00"W.
e. 49˚20'30"N, 124˚12'00"W.

WN (Jervis Inlet, B.C.) (Chartlet 9)—General surface and subsurface operations—Area enclosed by a line joining the following positions:

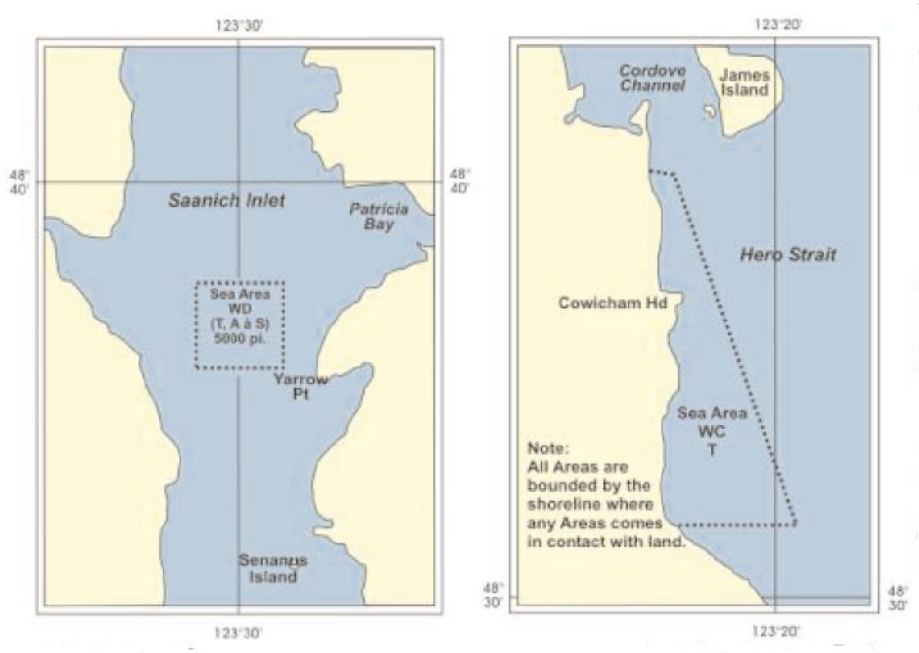
a. 49˚50'06"N, 124˚02'12"W.
b. 49˚48'21"N, 124˚05'06"W.
c. 49˚47'51"N, 124˚05'26"W.
d. 49˚46'40"N, 124˚03'16"W.
e. 49˚46'41"N, 123˚59'50"W.
f. 49˚46'54"N, 123˚59'32"W.
g. 49˚47'22"N, 123˚58'54"W.
h. 49˚48'30"N, 123˚57'30"W.
i. 49˚49'23"N, 124˚00'03"W.

WI/CYD124 (Texada Island, B.C.) (Chartlet 10)—Air and subsurface exercises—Area enclosed by a line joining the following positions:

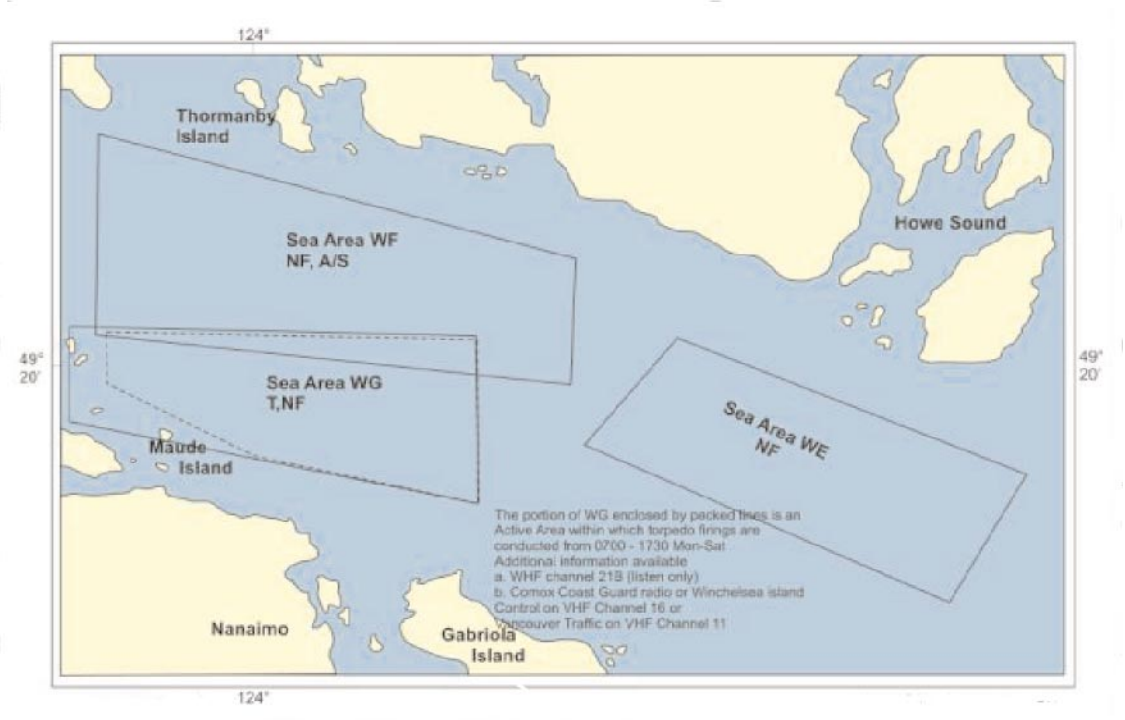
a. 49˚46'30"N, 124˚50'00"W.



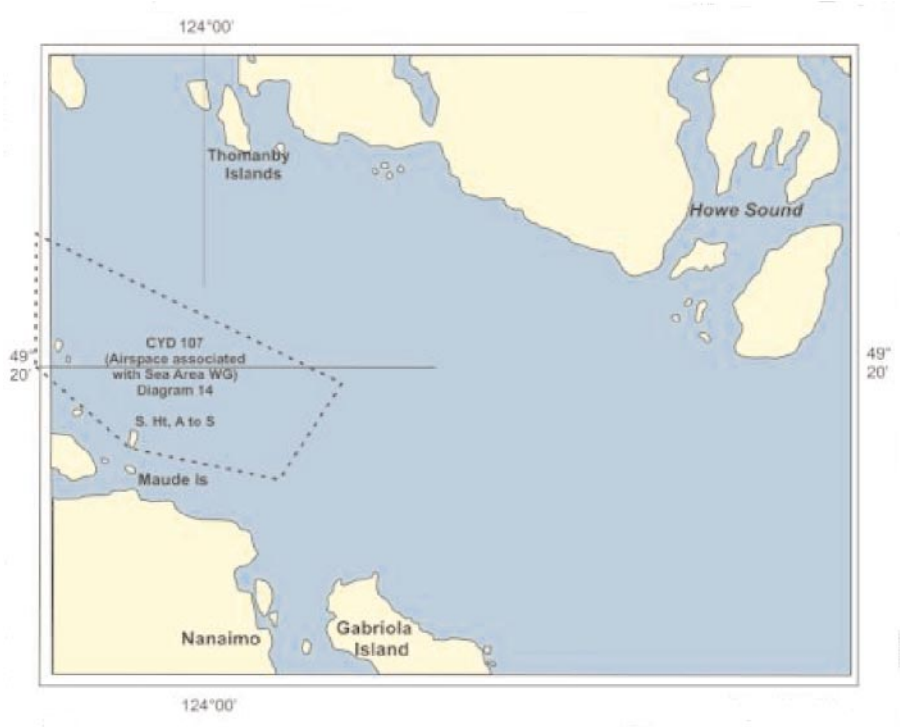
Chartlet 5—Area SOG



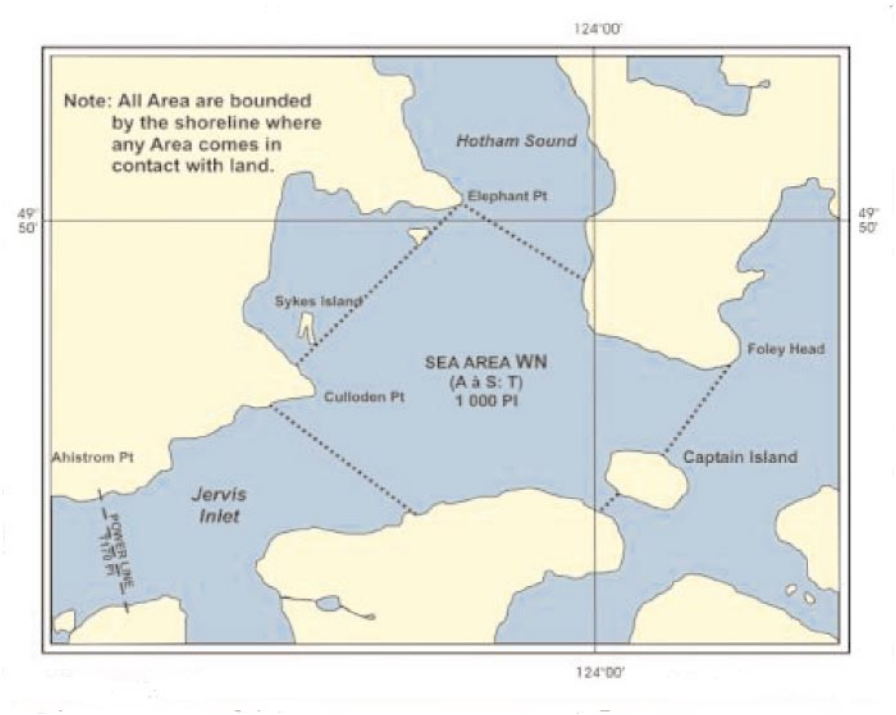
Chartlet 6—Area WC (Haro Strait) and Area WD (Saanich Inlet)



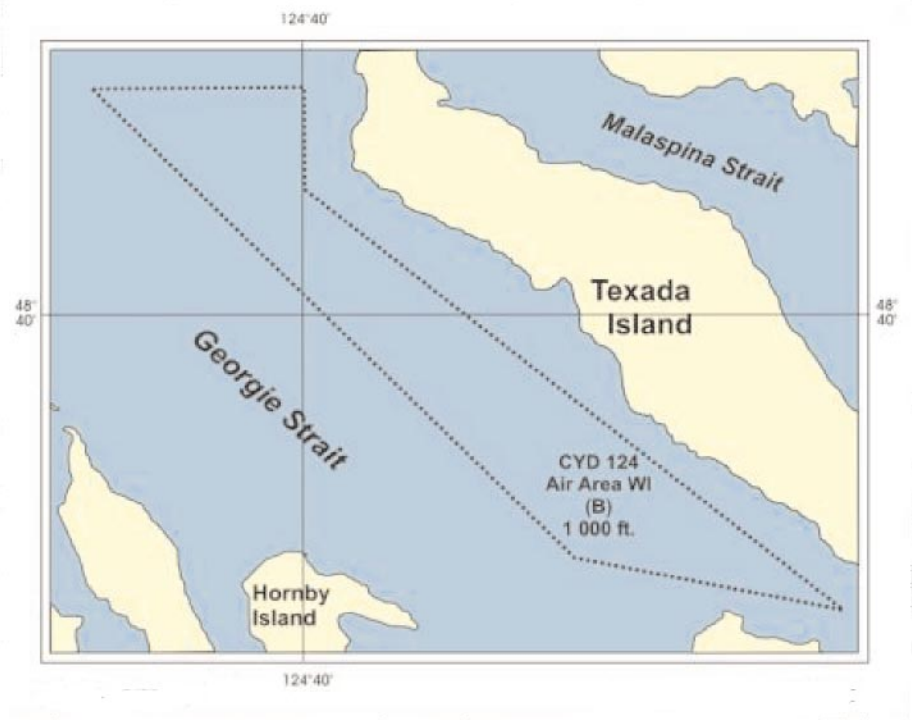
Chartlet 7—Area WE, Area WF, and Area WG



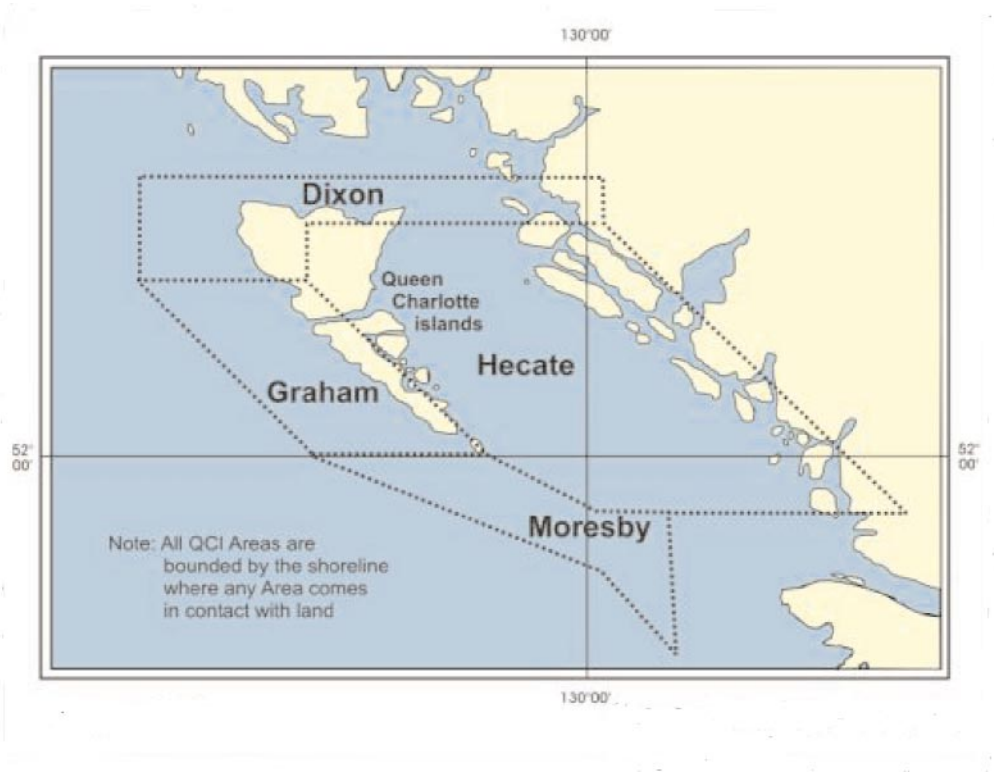
Chartlet 8—Area CYD107



Chartlet 9—Area WN



Chartlet 10—Area WI/CYD124



Chartlet 11—Queen Charlotte Island Areas

b. 49˚46'30"N, 124˚40'00"W.
c. 49˚43'30"N, 124˚40'00"W.
d. 49˚31'30"N, 124˚16'00"W.
e. 49˚33'00"N, 124˚28'00"W.

Sea Areas—Queen Charlotte Island

DIXON (Chartlet 11)—Subsurface operations—Area enclosed by a line joining the following positions:

a. 54˚25'N, 134˚00'W.
b. 54˚25'N, 130˚00'W.
c. 54˚00'N, 130˚00'W.
d. 54˚00'N, 132˚30'W.
e. 54˚30'N, 132˚30'W.
f. 54˚30'N, 134˚00'W.

HECATE (Chartlet 11)—Subsurface operations—Area enclosed by a line joining the following positions:

a. 54˚00'N, 130˚00'W.
b. 54˚00'N, 132˚30'W.
c. 53˚30'N, 132˚30'W.
d. 52˚00'N, 131˚00'W.
e. 51˚30'N, 130˚00'W.
f. 51˚30'N, 127˚20'W.

MORESBY (Chartlet 11)—Subsurface operations—Area enclosed by a line joining the following positions:

a. 52˚00'N, 132˚30'W.
b. 52˚00'N, 131˚00'W.
c. 51˚30'N, 130˚00'W.
d. 51˚30'N, 129˚20'W.
e. 50˚15'N, 129˚20'W.
f. 51˚00'N, 130˚00'W.

GRAHAM (Chartlet 11)—Subsurface operations—Area enclosed by a line joining the following positions:

a. 53˚30'N, 134˚00'W.
b. 53˚30'N, 132˚30'W.
c. 52˚00'N, 131˚00'W.
d. 52˚00'N, 132˚30'W.

Note.—All Queen Charlotte Islands are bounded by the shore where they come in contact with land.

Canadian Land Forces Exercise Areas

WK (William Head—Esquimalt, B.C.)—Area enclosed by a line joining the following positions:

a. 48˚20'42"N, 123˚32'42"W.
b. 48˚19'36"N, 123˚21'54"W.
c. 48˚23'00"N, 123˚22'42"W.
d. 48˚24'12"N, 123˚26'45"W.

WL (Albert Head—Esquimalt, B.C.)—Area enclosed by a line joining the following positions:

a. 48˚23'21"N, 123˚29'30"W to
b. 48˚23'33"N, 123˚16'24"W.

then along the arc of a circle centered on

c. 48˚23'06"N, 123˚28'54"W to
d. 48˚15'12"N, 123˚32'18"W to
e. 48˚18'53"N, 123˚30'45"W to
f. 48˚22'00"N, 123˚30'45"W.

then to point of commencement.

Chartlet 12—West Coast Firing Areas (WCFA)

Vancouver Island—West Coast Firing Areas (WCFA)

WCFA North (Chartlet 12)—Area enclosed by a line joining the following positions:

a. 49˚30'00"N, 127˚40'00"W.
b. 49˚15'00"N, 127˚40'00"W.
c. 49˚15'00"N, 127˚02'30"W.
d. 49˚24'36"N, 127˚10'12"W.
e. 49˚27'42"N, 127˚11'00"W.
f. 49˚30'00"N, 127˚14'00"W.

WCFA South (Chartlet 12)—Area enclosed by a line joining the following positions:

a. 49˚15'00"N, 127˚40'00"W.
b. 49˚00'00"N, 127˚40'00"W.
c. 49˚00'00"N, 127˚00'00"W.
d. 49˚12'18"N, 127˚00'00"W.
e. 49˚15'00"N, 127˚02'30"W.

Fishing Areas

Large concentrations of fishing vessels may be encountered in the following areas:

1. La Perouse Bank (48˚35'N., 125˚45'W.)—from April 15 to September 30.
2. Swiftsure Bank (48˚33'N., 125˚00'W.) and off Estevan Point (49˚23'N., 126˚32'W.) within the 100m depth contour.
3. Juan de Fuca Strait.
4. The Fraser River and its approaches—July 1 to November 1 and sporadically throughout the rest of ther year.

Large factory ships may be encountered off the W coast of Vancouver Island, from June to November, at various distances offshore between Cape Flattery and Estevan Point. These ships may be fishing, working cargo, or drifting.

Government

Flag of Canada

Canada is a confederation with a parliamentary democracy. The country is divided into ten provinces and three territories.

Elizabeth II, recognized as the Chief of State, appoints a Governor-General. The Governor-General appoints a Prime Minister after Parliamentary elections are held. The bicameral Parliament consists of a 105-member Senate, appointed by Governor-General for 5-year terms, and a directly-elected 301-member House of Commons, serving 5-year terms.

The legal system is based on English common law, except in the province of Quebec, where the legal system is based on French civil law.

The capital is Ottawa.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Monday	Variable
First Monday preceding May 25	Victoria Day and Queen Elizabeth II Day
July 1	Canada Day
First Monday in September	Labor Day
Second Monday in October	Thanksgiving Day
November 11	Remembrance Day
December 25	Christmas Day
December 26	Boxing Day

Note.—Canadian holidays falling on a Saturday or a Sunday are observed the following Monday.

Industries

The main industries are processed and raw minerals, food products, wood and paper products, transportation equipment, chemicals, fish products, petroleum, and natural gas.

Languages

English and French are the official languages.

Navigational Information

Enroute Volumes

Pub. 145, Sailing Directions (Enroute) Nova Scoatia and the Saint Lawrence River.

Pub. 146, Sailing Directions (Enroute) Newfoundland, Labrador, and Hudson Bay.

Pub. 154, Sailing Directions (Enroute) British Columbia.

Maritime Claims

The maritime territorial claims of Canada are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* Claims straight baselines. All waters between Canadian islands in the Arctic are claimed as internal waters. Hudson Bay is claimed as historic waters.

Maritime Boundary Disputes

Managed maritime boundary disputes with the United States at the following locations:

1. Dixon Entrance (British Columbia/State of Alaska).
2. Strait of Juan de Fuca (Vancouver Island/State of Washington).
3. Beaufort Sea (Yukon Territory/State of Alaska).
4. Machias Seal Island (44˚30'N., 67˚06'W.) and North Rock (New Brunswick/State of Maine).

Uncontested dispute with Denmark over the sovreignty of Hans Island (80˚49'N., 66˚30'W.), located in Kennedy Channel between Ellesmere Island and Greenland.

Pilotage

Pilotage is compulsory in all coastal water of British Columbia under the jurisdiction of the Pacific Pilotage Authority (PPA). Compulsory pilotage may be waived, as follows:

1. Vessels entering a compulsory pilotage area for the purpose of embarking a licensed pilot, until the ship reaches the place arranged for boarding and the licensed pilot has boarded.
2. Vessels leaving a compulsory pilotage area after the pilot has disembarked in the course of the vessel's departure.

The pilotage region of the PPA consists of all Canadian waters in and around the province of British Columbia. The pilotage region is divided into five areas, as follows:

1. Area 1.—All waters of the Fraser River.
2. Area 2.—All Canadian waters between Vancouver Island and the mainland. Its S limit is near the pilot boarding position at the lighted buoy off Brochie Ledge near Victoria. Its N limit is a line between Cape Caution and Cape Sutil, on the N end of Vancouver Island.
3. Area 3.—All Canadian waters on the W coast of Vancouver Island.
4. Area 4.—All Canadian waters on the mainland N of Vancouver Island. This area extends 5 to 15 miles off the E shore of Vancouver Island.
5. Area 5.—All Canadian waters in and around the Queen Charlotte Islands. This area extends 3 to 20 miles off the W shore of Hecate Strait, leaving a channel through the strait that is not within a compulsory pilotage area. The area also extends 3 to 5 miles off the W and N shores of the Queen Charlotte Islands.

Arrival messages.—The master, owner, or agent of a vessel that is to arrive in a compulsory pilotage area shall notify the PPA of the vessel's ETA in **Coordinated Universal Time (UTC)** at the pilot boarding station, as follows:

1. At Victoria Harbor Cautionary Lighted Buoy—At least 12 hours prior to arrival. The ETA shall be confirmed or corrected 4 hours prior to arrival.

2. Off Cape Beale, at the entrance to Trevor Channel in Barkley Sound—At least 48 hours prior to arrival. The ETA shall be confirmed or corrected 12 hours prior to arrival.
3. Off the Triple Islands, near Prince Rupert—At least 48 hours prior to arrival. The ETA shall be confirmed or corrected 12 hours prior to arrival.
4. At such places that the PPA may designate—At least 48 hours prior to arrival. The ETA shall be confirmed or corrected 12 hours prior to arrival.

Radio messages from ships requiring pilotage shall be addressed to Pilots Victoria and sent via any Canadian Coast Guard Marine Communications and Traffic Service Center by radiotelephone. The pilot message shall include the following in-formation:

1. The time in **UTC** that the pilot is required on board.
2. The place the vessel is to boarded.
3. The pilot service to be performed.
4. Whether or not the vessel is granted radio pratique.
5. The name, nationality, length, breadth, draft, and gross tonnage of the vessel.

Departure messages.—The master, owner, or agent of a vessel that is subject to compulsory pilotage shall notify the PPA in advance of the **Local Time** that a pilot is required to be on board a vessel that is to go:

1. From one place in a compulsory pilotage area to any other place in a compulsory pilotage area;
2. From one place in a compulsory pilotage area to a place outside a compulsory pilotage area; or
3. From a place outside a compulsory pilotage area to any place in a compulsory pilotage area.

A notice to obtain a pilot for departures and moves shall be given by calling a Pilot Dispatch Center, as follows:

1. The master, owner, or agent of a ship departing from a place where pilotage service is required shall place a Notice of Requirement in **Local Time** with the PPA at least 12 hours before the pilot or pilots are required to be on board the transportation to the ship specified in the Pilotage Order, or, at least 12 hours before the pilot or pilots are required to be on board the ship, if berthed at a place where pilots are based.
2. The Pilot Order Time as specified in a Notice of Requirement may be delayed once or cancelled without payment of cancellation fees if prior notice of delay or cancellation is received by the PPA not less than:
   a. 6 hours in the case of long jobs, i.e. pilotage assignment involving ports, places, or harbors on the W coast of Vancouver Island, and ports, places, or harbors N of 50˚N, excluding Port Alberni, Campbell River, Duncan Bay, Prince Rupert, and Kittimat.
   b. 4 hours in the case of Roberts Bank, English Bay, Fraser River Ports, all anchorages and berths E of Berry Point, and airports at Vancouver, Victoria, and Cassidy.
   c. 3 hours in all other cases.

The PPA may agree to waive the 12-hour Notice of Requirement providing the master, owner, or agent gives reasonable cause for not complying.

All Notices of Requirement scheduled between the hours of 1200 and 1700 shall be confirmed, delayed, or cancelled by 0900 daily. Any subsequent delays or cancellations will incur the appropriate detention or cancellation fees.

All Notices of Requirement scheduled between the hours of 1700 and 2100 shall be confirmed, delayed, or cancelled by 1200 daily. Any subsequent delays or cancellations will incur the appropriate detention or cancellation fees.

In cases of emergency involving danger to life, limb, or property, the PPA shall waive any Notice of Requirement and dispatch the first available pilot to cover the emergency.

Pilot boarding.—Should rough weather at Cape Beale or the Triple Islands prevent a pilot from boarding, the vessel should follow the pilot boat into more sheltered waters where embarkation is more practical.

In clear weather vessels should indicate their desire for a pilot, by day, by hoisting the International Code flag "G" and, by night, by a signal of four long flashes on their signal lamp.

In fog or thick weather vessels should make a whistle signal of four long blasts. A repetition of this signal will assist the pilot boat in locating the vessel.

Pilot boats do not cruise on station but leave the pilot station on shore, subject to a vessel's ETA, in ample time to meet the vessel at the boarding station.

The attention of mariners is drawn to Rule 35(i) of the International Regulations for Preventing Collision at Sea, which reads: "A pilot vessel when engaged on pilotage duty may in addition to the signals prescribed in paragraphs (a), (b), and (g) of this Rule sound an identity signal consisting of four short blasts." Mariners are advised that pilot vessels on the coasts of Canada adhere to this rule for sound signals.

The pilot boats are fitted with radar to assist in locating and tracking vessels during periods of low visibility.

The pilot station at Victoria is equipped with VHF radiotelephones and maintains a 24-hour watch on VHF channel 16. All pilot vessels are similarly equipped and may be contacted on either VHF channel 16 or VHF channel 17.

Pollution

Oil Pollution Damage

The International Convention on Civil Liability for Oil Pollution Damage 1992 (CLC) came into force on May 29, 1999 for Canada. All vessels covered by this convention are now required to carry a certificate showing that a contract of insurance or other security that satisfies the requirements of the 1992 CLC is in force with respect to the vessel. The area of application has now been extended to include voyages to offshore terminals within the Exclusive Economic Zone (EEZ). This means that some vessels previously exempt under the 1969 CLC may now be subject to the requirements for certification under the 1992 CLC. A 1992 CLC certificate is required for all ocean-going vessels carrying, in bulk as cargo, more than 2,000 tons of crude oil, fuel oil, heavy diesel oil, lubricating oil, or any other persistent hydrocarbon mineral oil that enters of leaves a port or offshore terminal within Canadian waters or the Canadian EEZ.

As of April 1995, Canadian Shipping Act amendments require that oil tankers of 150 grt, and all other vessels of 400 grt trading in Canadian waters, enter into an arrangement with a certified response organization.

Such vessels must also carry a declaration attesting to the existence of an arranged response also naming the ship's insurer and persons authorized to implement the vessel's oil pollution emergency plan and its clean up.

Under the amendments, any person or ship found discharging pollutants in Canadian water faces fines of up to $250,000 (Canadian dollars) and or 6 months imprisonment. Individuals found guilty of a marine pollution related offense face fines of up to $1 million (Canadian dollars), and/or 3 years imprisonment.

All vessels operating in Canadian and adjacent waters are requested to report oil slicks or pollution of any type to the nearesr coast radio station or VTS Center. The report should include the following information:

1. Name of vessel.
2. Location of vessel.
3. Time of incident or sighting.
4. Location of pollution.
5. Extent of pollution and quantity of pollution, if known.
6. Name of source of pollution, including port of registry for a vessel.
7. Any other relevant information.

Tanker Exclusion Zone

Loaded crude oil tankers of the Trans Alaska Pipeline System (TAPS) are requested to remain seaward of the Tanker Exclusion Zone (TEZ), defined as a line joining the following positions:

a. 54˚00'N, 137˚17'W.
b. 51˚05'N, 132˚30'W.
c. 48˚32'N, 126˚30'W.
d. 48˚32'N, 125˚09'W.

The purpose of the TEZ is to keep laden tankers W of the zone boundary in an effort to protect shoreline and coastal waters from a potential risk of pollution.

Regulations

Marine Transport Security and 96-Hour Notification Prior to Entering Canadian Waters

The *Marine Transportation Security Regulations* came into force on July 1, 2004. These regulations address marine security levels, ship reporting responsibilities, and the responsibilities of the Canadian Government for the provision of information to vessels pertaining to security.

The entire text of the *Canadian Marine Transportation Security Regulations* and the *Marine Transportation Security Act* can be found on the Transport Canada web site.

Transport Canada Home Page
http://www.tc.gc.ca

Application.—The *Canadian Marine Transportation Security Regulations* apply to vessels and marine facilities (ports) in Canada and Canadian ships outside Canada engaged on voyages between a port in one country and a port in another country and that:

1. Are more than 100 tons gross tonnage, other than a towing vessel.
2. Carry more than 12 passengers
3. Are towing vessels engaged in towing a barge astern or alongside or pushing ahead, if the barge is carrying certain dangerous cargoes means [dangerous goods], other than products, substances, or organisms identified in Class 3, 4, 8 or 9 of the schedule to the *Transportation of Dangerous Goods Act, 1992, that are carried in bulk or in such a quantity as to require an emergency response assistance plan under section 7.1 of the Transportation of Dangerous Goods Regulations.*

The regulations do not apply to pleasure craft, fishing vessels, vessels without a crew that are in dry-dock, dismantled or laid up vessels, or government vessels.

Maritime Security (MARSEC) Levels.—MARSEC levels are based on the International Maritime Organization's International Ship and Port Facility Security (ISPS) Code security levels and describe the levels of threat that necessitate that the master of a vessel, the operator of a marine facility, or a port administration (as defined in the Canadian Regulations) take steps to reduce the likelihood of a marine transportation security incident.

MARSEC Levels are defined in the *Marine Transportation Security Regulations*, as follows:

1. MARSEC Level 1—The level for which minimum security procedures are maintained at all times.
2. MARSEC Level 2—The level for which security procedures additional to those of MARSEC level 1 are maintained for a limited period as a result of heightened risk of a security threat or security incident.
3. MARSEC Level 3—The level for which security procedures additional to those of MARSEC Level 1 and MARSEC Level 2 are maintained for a limited period when a security threat or security incident is probable or imminent, regardless of whether the specific target is identified.

MARSEC Level 1 has been in effect since July 1, 2004. A vessel to which the regulations apply must operate under MARSEC Level 1 at all times unless directed by the Minister of Transport to increase to a higher MARSEC level.

The operator of a vessel shall, before the vessel enters a port or interfaces with a marine facility, ensure that all procedures are taken that are specified in the vessel security plan for compliance with the MARSEC level in effect for the port or marine facility.

Vessel Responsibilities.—Any vessel that is operating at a higher MARSEC level than that in effect in the port or marine facility it is interfacing with, or is about to interface with, shall report their MARSEC level to a Marine Communications and Traffic Services (MCTS) Center of the Canadian Coast Guard. MARSEC Reports shall include the following information:

1. Identification of the vessel (vessel's name and radio call sign).
2. Time and position of the vessel.
3. Destination of the vessel.
4. MARSEC level at which the vessel is operating.

If an MCTS Center advises that there is a change in the MARSEC level affecting any port or other area within Canadian waters and a vessel cannot comply with the written procedures as outlined in the vessel security plan, the vessel must notify an MCTS Center.

When at anchor or alongside a marine facility, if a vessel receives notice from a Port Administration or a marine facility security officer that the MARSEC Level in the port or marine facility in which the vessel is located or is about to enter or interface with is raised to a higher level, the master of a vessel shall ensure that the vessel complies, without undue delay,

before interfacing with the facility and no later than 12 hours after being notified of the higher level, with all procedures specified in the vessel security plan for compliance with that higher MARSEC level.

If the vessel is in a Canadian port, alongside or at an anchorage, it shall ensure that the local Port Authority or the marine facility security officer who issued the notice is advised if the vessel cannot comply with the higher MARSEC level that has been implemented.

If the vessel is a Canadian ship in the waters of a contracting government, the vessel should communicate its MARSEC level information to the relevant maritime authority of that country. If the vessel is a Canadian ship in the waters of a non-contracting government, and the master has to use temporary procedures or upgrade the vessel's MARSEC level to maintain the safety of the vessel, the master shall communicate this information to a Canadian MCTS Center.

Pre-arrival Information Report (PAIR).—The PAIR submission applies to SOLAS and non-SOLAS vessels bound for Canadian waters.

A SOLAS vessel is defined as a vessel that:

1. Is 500 gross tons or more or is carrying more than 12 passengers, and
2. Is engaged on a voyage from a port in one country to a port in another country other than a voyage solely on the Great Lakes and the Saint Lawrence River as far seaward as a strait line drawn from Cap des Rosiers to West Point, Anticosti Island and from Anticosti Island to the N shore of the Saint Lawrence River along the meridian of 63˚00'W.

A non-SOLAS vessel is defined as a vessel that:

1. Is not a SOLAS vessel,
2. Is engaged on a voyage from a port in one country to a port in another country, and
   a. is more than 100 gross tons, other than a towing vessel,
   b. carries more than 12 passengers, or
   c. is a towing vessel engaged in towing a barge astern or alongside or pushing ahead, if the barge is carrying certain dangerous cargo.

The PAIR should be send to one of the addresses below:

1. Vessels transiting through Canadian territorial waters or inbound to a Canadian port on the W coast shall send a PAIR to the Canadian Coast Guard Regional Marine Information Centre (RMIC) via one of the following methods:
   - E-mail: rmic-pacific@pac.dfo-mpo.gc.ca
   - Telex: 21-043-52586 "CGTC VAS VCR"
   - Any Canadian Coast Guard MCTS Centre (free of charge)
   - Directly to CVTS Offshore by fax: (604) 666-8453
2. Vessels inbound to Canadian waters on the E coast including a Canadian or American port in the Great Lakes shall send a PAIR to ECAREG Canada via one of the following methods:

St. John's MCTS Center
Telex: 21-016-4530
Facsimile: (709) 772-5369
Telegraphic Identifier: CCGTC SNF
E-mail: ecaregsnf@innav.gc.ca

Halifax MCTS Center
Telex: 21-019-22510
Facsimile: (902) 426-4483
Telegraphic Identifier: CCG MRHQ DRT
E-mail: ccgops@attnmail

3. Vessels inbound to a port within the Canadian Arctic Zone shall send a PAIR to NORDREG Canada via one of the following methods:

Iqaluit MCTS Center
Telex: 21-063-15529
Facsimile: (867) 979-4236
Telegraphic Identifier: NORDREG CDA
E-mail: iqanordreg@innav.gc.ca
Note.—The Iqaluit MCTS Center is open only during the navigation season (June 25 approximately to November 30 approximately)

If the duration of the segment of the voyage before entering Canadian waters is less than 24 hours, the PAIR shall be submitted as soon as practicable before entering Canadian waters but no later than the time of departure from the last port of call.

If the duration of the segment of the voyage before entering Canadian waters is less than 96 hours but more than 24 hours, the PAIR shall be submitted at least 24 hours before entering Canadian waters.

All vessels are required to send their PAIR fully completed. They must also send a copy of their International Ship Security Certificate, Interim Ship Security Certificate, or Ship Security Compliance Document if the vessel is on its first visit to Canadian waters since July 1, 2004. Any vessel with an incomplete PAIR will be denied entry into Canadian waters. It is the responsibility of the master of the vessel to ensure that all the information provided to Transport Canada is complete and correct.

Transport Canada will be in communication with the vessel only when seeking additional information. Any vessel that enters Canadian waters after being denied entry into Canadian waters may be subjected to the following control actions, at the discretion of Transport Canada:

Transport Canada will be in communication with the vessel only when seeking additional information. Any vessel that enters Canadian waters after being denied entry into Canadian waters may be subjected to the following control actions, at the discretion of Transport Canada:

1. The vessel may be detained.
2. The vessel may be redirected.
3. The vessel may be expelled.

The vessel's PAIR shall include the following information:

1. Vessel's name.
2. Country of registry.
3. Name of vessel's registered owner.
4. Name of vessel's operator.
5. Name of vessel's classification society.
6. Vessel's international radio call sign.

7. Vessel's International Ship Security Certificate, Canadian Vessel Security Certificate, or Ship Security Compliance Document number.
8. Vessel's International Maritime Organization number, if it is a SOLAS ship.
9. Date of issuance, date of expiry, and name of the issuing body of its International Ship Security Certificate, Canadian Vessel Security Certificate, or Ship Security Compliance Document.
10. Confirmation that the vessel has an approved vessel security plan.
11. Vessel's current MARSEC level.
12. A statement of when its last ten declarations of security were completed.
13. Details of any security threats to the vessel during the last ten calls at marine facilities.
14. A statement as to whether the vessel consents to tracking by the Canadian Government.
15. Details of any deficiencies in its security equipment and systems, including the communication systems, and the way in which the master of the vessel intends to rectify them.
16. Name of vessel's agent and contact person and their 24-hour telephone and facsimile numbers, if applicable.
17. Name of vessel's charterer, if applicable.
18. Vessel's position and time at which it reached that position.
19. Vessel's course and speed.
20. Vessel's destination and estimated time of arrival at its destination.
21. Name of a contact person at the marine facility that it will visit and their 24-hour telephone and facsimile numbers.
22. The following information in respect to each of the last ten marine facilities visited:
    a. Receiving facility.
    b. Marine facility visited.
    c. City and country.
    d. Date and time of arrival.
    e. Date and time of departure.
23. A general description of the cargo, including cargo amount.
24. The presence and description of any dangerous substances or devices on board, if applicable.

Any change in the vessel's MARSEC level during the transit from the vessel's location at 96 hours prior to arriving at the port facility must be immediately reported to an MCTS Center.

The vessel security officer shall ensure that all security threats and security incidents are reported and recorded in accordance with the *Marine Transportation Security Regulations*. When underway or at anchor in an uncontrolled anchorage, reports shall be made to an MCTS Center. When alongside or at anchor in a controlled anchorage, reports shall be made to the Port Administration and appropriate law enforcement. When the vessel is in a Vessel Traffic Services Zone, the vessel shall report to the MCTS Center.

If the master of a vessel is required to institute temporary procedures in response to a security threat, the master shall ensure, as soon as possible, that a report is made, as follows:

1. If the vessel is in Canadian waters, to the nearest MCTS Center.
2. If the vessel is a Canadian ship in the waters of a contracting government, to the relevant maritime authority of that government and an MCTS Center (ECAREG Canada on the East Coast or the Regional Marine Information Center (RMIC) on the Canadian West Coast).
3. If the vessel is a Canadian ship in other waters, to an MCTS Center.

MCTS Center Responsibilities.—When the MARSEC level increases from the normal MARSEC Level 1, the MCTS Centers will issue a broadcast informing vessels of the increase to either MARSEC Level 2 or MARSEC Level 3. Once the MARSEC level decreases, the MCTS Centers will issue a broadcast informing vessels of the downgrade in MARSEC levels.

In VTS zones, the MCTS Centers often play a role in regulating vessels at anchor on behalf of port authorities. Therefore MCTS Centers will be involved in informing ships or port authorities about the MARSEC levels at port facilities or of the vessel.

Ship Security Alert System.—If the security of a vessel is under threat or in any way compromised, the master or other competent authority onboard may activate the Ship Security Alert System, a system that transmits an automated message from vessel to shore. This message identifies the vessel and provides position information. When a security alert is received by a Canadian Maritime Rescue Coordination Center, the appropriate shore authorities will be notified.

AMVER Reporting

Vessels proceeding on an offshore voyage of more than 24 hours' duration which will take them outside VHF and MF radio coverage areas are encouraged to participate in the Automated Mutual-assistance Vessel Rescue System (AMVER). Participation is compulsory for all Canadian vessels and all non-Canadian vessels engaged in coastal trading in Canada. Of this group, the following vessels are exempted:

1. Fishing vessels engaged in fishing.
2. Ships operated by the Canadian government on law enforcement duties.
3. Vessels whose voyages will be within the waters of an Arctic Shipping Safety Control Zone, Hudson Bay, James Bay, or Ungava Bay.
4. Vessels in other waters provided their voyages are within VHF or MF radio coverage areas.

Messages should be addressed to "AMVER Vancouver" or "AMVER Halifax." They may be sent through any Canadian Marine Communications and Traffic Services Center (MCTS) which accepts AMVER messages or through a Canadian Coast Guard vessel.

Practices and Procedures for Public Ports

Transport Canada, pursuant to Section 76 of the Canada Marine Act, has instituted practices and procedures to be followed by all ships entering, berthing, departing, maneuvering, or anchoring in the waters of all public ports. These practices and procedures, which have been developed for the purposes of promoting safe and efficient navigation and environmental protection within the limits of public ports, can be accessed through the website below:

Practices and Procedures for Public Ports
http://www.tc.gc.ca/programs/ports/practproc.htm

Transport Canada Marine Acts and Regulations

Further information on Marine Acts and Regulations issued by Transport Canada can be found at the website below.

Transport Canada Marine Acts and Regulations
http://www.tc.gc.ca/acts-regulations/marine/menu.htm

Chart and Publications Regulations

Extracts from the Canadian regulations are quoted below:

1. These regulations may be cited as the Chart and Nautical Publications Regulations, 1995.

6.1 Subject to subsection 6.3, the person-in-charge of the navigation of a ship in waters under Canadian jurisdiction shall use, in respect of each area to be navigated by the ship, the most recent edition of:

(a) the reference catalog i.e., Catalogue of Nautical Charts and Related Publications.

(b) the annual edition of the Notices to Mariners, published by the Department of Fisheries and Oceans.

(c) the following publications, namely:

(i) sailing directions, published by the Canadian Hydrographic Service.

(ii) tide and current tables, published by the Canadian Hydrographic Service.

(iii) lists of lights, buoys, and fog signals, published by the Department of Fisheries and Oceans.

(iv) where the ship is required to be fitted with radio equipment pursuant to any Act of Parliament or of a foreign jurisdiction, the Radio Aids to Marine Navigation, published by the Department of Transport

(d) the documents and publications listed in the Schedule of Documents and Publications.

6.3 The documents and publications referred to in paragraphs 6.1(c) and (d) may be substituted for similar documents and publications issued by the government of another country, if the information contained in them that is necessary for the safe navigation of a ship in the area in which a ship is to be navigated is as complete, accurate, intelligible, and up-to-date as the information contained in the documents and publications referred to in those provisions.

7. The master of a ship shall ensure that the charts, documents, and publications required by these regulations are, before being used for navigation, correct and up-to-date, based on information that is contained in the Notices to Mariners, Notices to Shipping, or Radio Navigational Warnings.

Schedule of Documents and Publications

1. Ice Navigation in Canadian Waters, published by the Department of Transport, where the ship is making a voyage during which ice may be encountered.

2. Table of Life-Saving Signals, published by the International Maritime Organization and reprinted by the Department of Transport, where the ship is making a foreign voyage, a home-trade voyage, Class I, II, or III, or an inland voyage, Class I.

3. The Merchant Ship Search and Rescue Manual (MERSAR), published by the International Maritime Organization, where the ship is making a foreign voyage or a home-trade voyage, Class I or II.

4. Where the ship is required to be fitted with radio equipment and is making a foreign voyage or a home-trade voyage, Class I or II, the following publications, published by the International Maritime Organization and reprinted by the Department of Transport:

(a) the International Code of Signals.

(b) the Standard Marine Navigational Vocabulary.

Conservation of Marine Animals

The Federal Department of Fisheries and Oceans ensures the protection and conservation of marine mammals in Canadian waters. Harassing whales changes or interferes with their behavior, forces them away from their habitat at critical times in their annual reproduction and feeding cycles, and may cause them injury.

The Marine Mammal Regulations of the Fisheries Act (R.S.C., 1985, c.F.-14. Amended 1993) prohibit any form of harassment of cetaceans, including repeated attempts to pursue, disperse, or herd whales and any repeated intentional act of negligence resulting in disruption of their normal behavior. Individuals who contravene the Marine Mammal Regulations are guilty of an offense and liable to a fine not exceeding $500,000 and twenty four (24) months imprisonment (Fisheries Act sec. 78).

The following are general guidelines for dealing with marine mammals:

1. Do not hunt, chase, follow, disperse, drive, herd, or encircle whales.
2. Avoid any sudden changes of course or speed.
3. Avoid heading directly toward a whale.
4. If in an area known to be frequented by whales, be on the lookout to avoid collisions.
5. Travel parallel to whales' direction of travel.
6. The whales may come close to you; if they do, do not chase them. These animals may be calves that approach while their mothers are submerged feeding. Keep clear of the tail.
7. If you are operating a sailing vessel with an auxiliary motor, leave it in idle or turn on the echo sounder to signal your presence.
8. If it is impossible to detour around a whale or group of whales, slow down immediately and wait until you are more than 400m away before resuming speed.

Controlled Access Zones

The Minister of National Defense has designated certain areas of Canadian waters as Controlled Access Zones (CAZ). A designated CAZ is in effect for an indeterminate period. The Chief of the Defense Staff sets conditions for access/non-access into a CAZ.

Information on the status of a CAZ is given in the Canadian Annual Notice to Mariners, the Canadian Monthly Notice to Mariners, and through the local Vessel Traffic Management System. The local Queen's Harbourmaster should be contacted if a vessel determines that they will pass through a CAZ.

The CAZs located in the waters covered by this publication are, as follows:

1. Esquimalt Harbour.—The Esquimalt Harbour CAZ is comprised of the water area in Esquimalt Harbour and the contiguous area of water between lines joining the following sets of positions:

a. North boundary:
i. 48˚27.13'N, 123˚27.36'W.
ii. 48˚27.23'N, 123˚27.01'W.
b. South boundary:
i. 48˚25.31'N, 123˚25.21'W.
ii. 48˚23.21'N, 123˚25.21'W.
iii. 48˚23.03'N, 123˚28.79'W.

Designated CAZs within the Esquimalt Harbour CAZ are, as follows:

a. Water area contiguous to the naval jetties in Esquimalt Harbour.

b. Water area within 200m of a designated vessel underway in the Esquimalt Harbour CAZ.

c. Water area within 500m of a designated vessel that is stationary, including at anchor, in the Esquimalt Harbour CAZ.

2. Rocky Point Ammunition Depot, located SW of Esquimalt Harbour.—The Rocky Point CAZ is comprised of the water area contiguous to the ammunition depot bounded by lines joining the following positions:

a. 48˚20.04'N, 123˚33.20'W.
b. 48˚20.16'N, 123˚32.98'W.
c. 48˚20.12'N, 123˚32.70'W.
d. 48˚19.98'N, 123˚32.56'W.
e. 48˚19.78'N, 123˚32.69'W.

3. Nanoose Bay.—The Nanoose Bay CAZ is comprised of Nanoose Harbour and the contiguous water area bounded by lines joining the following positions:

a. 49˚16.38'N, 124˚07.05'W.
b. 49˚16.38'N, 124˚06.05'W.
c. 49˚15.96'N, 124˚06.05'W.
d. 49˚15.94'N, 124˚06.32'W.
e. 49˚15.28'N, 124˚06.30'W.

Designated CAZs within the Nanoose Bay CAZ are, as follows:

a. Water area contiguous to the naval jetties in Nanoose Harbour.

b. Water area within 200m of a designated vessel underway in the Nanoose Bay CAZ.

c. Water area within 500m of a designated vessel that is stationary, including at anchor, in the Nanoose Bay CAZ.

Quarantine Reporting Requirements

The "Quarantine Act and Regulations" require that, with the exemption in normal circumstances of vessels engaged in coastwise traffic with the United States, the master of every vessel shall complete and furnish promptly, at the first port of arrival in Canada, a Declaration of Health in the prescribed form.

Advance radio notification to a quarantine station applies only if a condition of health irregularity occurs onboard. The master of a vessel will be guided by instructions received by radio, from the quarantine officer, in reply to a notification of irregularity onboard. Section 12 of the "Quarantine Regulations" prescribes the conditions for requirements of advance notification by radio, the essential information to be supplied in such circumstances, and the appropriate quarantine station for the area. It is quoted, as follows:

12.(1) Where, in the course of a voyage of a vessel to one of the ports referred to in subsection (3):

(a) a member of the crew or a passenger onboard the vessel has:
(i) died,
(ii) has a temperature of 38˚C or greater that persisted for two days or more or was accompanied or followed by a rash, jaundice, or glandular swelling, or
(iii) suffered from diarrhea severe enough to interfere with that person's work or normal activity,

(b) the person in charge of the vessel is, during the period:
(i) of four weeks preceding the estimated time of arrival of the vessel, or
(ii) since he last submitted a declaration of health as required by section 16

whichever is the lesser, aware of any instance of illness among the crew or passengers that he suspects is of an infectious nature and may lead to the spread of disease

(c) the vessel has:
(i) within fourteen days of its estimated time of arrival in Canada been in a country that, in the opinion of a quarantine officer, is infected or suspected of being infected with smallpox, or
(ii) within sixty days of its estimated time of arrival in Canada been in a country that, in the opinion of a quarantine officer, is infected or suspected of being infected with the plague,

(d) a certificate establishing that the vessel has been de-ratted or exempted from de-ratting procedures had expired or is about to expire,

the person in charge of the vessel shall, by radio at least 24 hours prior to the vessel's estimated time of arrival at its port of destination and between the hours of 9:00 o'clock in the morning and 5:00 o'clock in the afternoon, notify the quarantine officer at the quarantine station designated in subsection (3) for that port of the occurrence and provide him with the information described in subsection (2).

(2) The information to be provided to the quarantine officer pursuant to subsection (1) is:

(a) the name and nationality of the vessel;
(b) the ports called at during the voyage of the vessel;
(c) the nature of the cargo on board the vessel;
(d) the number of persons comprising the crew of the vessel;
(e) the number of passengers on board the vessel;
(f) the port of destination of the vessel and the name of the vessel's owner or, if the owner is not in Canada, the name of the vessel's agent in Canada;
(g) the condition of all persons on board the vessel and details of any death or illness occurring during the voyage;
(h) whether the body of any person is being carried on the vessel;
(i) the estimated time of arrival of the vessel at the port of destination;
(j) the date and place of issuance of any de-ratting certificate or de-ratting exemption certificate applicable to the vessel.

(3) For the purpose of subsection (1), the quarantine station for vessels bound for;

(e) a port in the Province of British Columbia, is Quarantine Station, Vancouver, British Columbia.

Minor Waters

The following sheltered waters on the coast of British Columbia are specified as minor waters:

1. Alberni Inlet and the eastern channel of Barclay Sound as far W as Bamfield Inlet.
2. Quatsino Sound and all waters connected therewith as far W as Koprino Harbor.
3. False Creek, Vancouver, E of Burrard Bridge.
4. Jervis Inlet inside a line drawn between Thunder Point and Ball Point and all waters connected therewith not seaward of Fox Island in Telescope Passage, that is reported to be inclusive of the Agamemnon Channel and Pender Harbor inside a line drawn between Fearney Point and Moore Point.
5. Prince Rupert Harbor as far S as Charles Point.

Disposal of Rubbish—Canadian Waters

The Canadian Navigable Waters Protection Act provides that floating material may not be jettisoned into any navigable water. Material liable to sink to the bottom may not be deposited in depths of less than 22m in tidal waters or 14.6m in non-tidal waters.

Rules of the Road—Special Rules and Provisions of a Local Nature

The International Regulations for Preventing Collisions at Sea, 1972 are modified in various Canadian waters by the following:

1. Canadian Regulations for the Prevention of Collisions at Sea, cited as Collision Regulations, amended by SOR/90-702 and published in 1991.
2. Inland Navigation Rules.
3. Small Vessel Regulations.
4. Boating Restriction Regulations.

Carriage of Second Masthead Light Aft

A vessel of 50m or more in length when towing or pushing another vessel should carry the second white masthead light aft prescribed in Rule 23 (a)(ii) of Schedule 1 of the Collision Regulations.

Non-displacement Craft

Non-displacement vessels including hydrofoil craft and air cushion vehicles (ACV) may be encountered in all waters by day or night. A hydrofoil craft is capable of high speed when foilborne and can also operate as a conventional vessel with the hull fully waterborne. An ACV can be wholly or partially supported by a self-generated air cushion under the hull of the vessel. Present day ACVs are a variation of two main types.

One type has rigid keels or side walls and, even when operating fully on the air cushion, proceeds with the keels or side walls remaining in the water.

The other type, when fully cushion-borne, has no rigid connection with the water. Both types are also capable of proceeding fully waterborne. When waterborne and when operating with part of the rigid structure remaining in the water. ACVs have similar characteristics to shallow draft vessels. When partially or fully cushion-borne, although no air caps may be visible, they can operate over land or water. Some may be capable of high speeds up to 80 knots and may be greatly affected by the wind.

In consequence the aspect and navigation lights of an ACV do not necessarily indicate its true direction of motion.

In an emergency all ACVs can stop extremely quickly by alighting on the water. Because of the noise of operation of some types of ACVs sound signals may not be heard from them and they may not be able to hear sound signals made by other vessels. Maneuvering capability, high speed, the possible difficulty of hearing signals from other vessels, and the fact that a non-displacement vessel may not indicate her true direction of motion by the appearance of her navigation lights are taken into account by such a vessel in obeying the construing and appropriate steering and sailing rules.

Dracones and Vessels Towing Dracones

Dracones are sausage-shaped envelopes of flexible material used for transporting oil in bulk. The dracone's buoyancy is provided by the liquid it contains and as a result is almost entirely submerged. Vessels towing dracones and dracones being towed exhibit the following lights and shapes.

By day, the vessel towing, exhibits, where it can best be seen, a black diamond shape. The dracone, or the last dracone if there is more than one in a line, tows a float also exhibiting a black diamond shape, thus indicating the extremity of the tow.

By night, the vessel towing, exhibits, in addition to normal towing lights, where it can best be seen, an all round blue light visible at a distance of at least 2 nautical miles, and the float towed by the dracone, or the last dracone, if more than one are in line, exhibits an all round white light visible at a distance of at least 2 nautical miles.

Night Signal for Vessels Requiring Health Clearance

The International Code of Signals provides that a vessel requiring HEALTH CLEARANCE may by night carry a red light over a white light in a vertical line about 1.8m apart and visible all-round the horizon.

Such lights should only be exhibited within the precincts of a port.

Marking of Fishing Gear—Pacific Waters

Fishing gear set in all waters of the Pacific coast under Canadian jurisdiction is marked, as follows:

a. A gill net operated from a commercial fishing vessel has attached to each end:
   1. By day, a buoy painted iridescent or plain orange and not less than 1.25m in circumference.
   2. By night, a lantern showing a white light.

b. A longline used in fishing is marked by a buoy attached to each end of the line.

c. A crab, shrimp, or prawn trap set singly is marked by a buoy.

Fisherman at various locations along the British Columbia coast sometimes use quick flashing lights, called "Scotty Gear," on their net floats. Care must be used not to confuse these lights with lighted aids to navigation.

Steering Gear and Main Propulsion System Testing

For information on required testing see the section titled Vessel Traffic Service—CVTS Advance Report.

Search and Rescue

The Canadian Armed Forces, supported by the Canadian Coast Guard, are responsible for coordinating all Search and Rescue (SAR) activities in Canada, in Canadian waters, and on the high seas off the coasts of Canada.

The Search and Rescue operations in the Pacific area are coordinated at the Joint Rescue Coordination Center (JRCC) situated at the Canadian Forces Base Esquimalt (Victoria). Canadian Forces and Coast Guard officers maintain a continuous watch at this center. The JRCC is the headquarters of a coordinated network of agencies trained to search for and aid vessels in distress. The JRCC is alerted by Coast Guard Marine Communications and Traffic Service Centers immediately upon receiving a distress signal.

The Joint Rescue Coordination Center Victorian can be contacted by e-mail, as follows:

dutyyj@sarnet.dnd.ca

All Canadian Government owned ships and aircraft are available for Search and Rescue duties when required, as are all Canadian registered ships. In addition the Canadian Coast Guard operates a number of specialized vessels on the W coast of Canada whose prime mission is Search and Rescue. Canadian Coast Guard cutters and vessels can easily be identified by their red hulls and white superstructures.

The Canada Shipping Act allows the Master of any vessel in distress to requisition any vessel or vessels which answer the distress signals to come to the vessel's assistance. Even if done and the situation appears well in hand it is advisable for the Master to ensure the JRCC concerned is informed and kept up to date since the JRCC has at its disposal expertise and resources specialized in SAR.

A vessel which is requisitioned to proceed to the assistance of a vessel in distress is required to accept the direction of the JRCC and/or the Master of the vessel in distress.

The Canada Shipping Act provides for legal penalties for refusal to give aid. The JRCC may delegate its authority to the Master of a vessel on the scene who is then termed the "Coordinator Surface Search (CSS)" or "On Scene Commander (OSC)."

Patrol Vessels

Regular patrols by Canadian Coast Guard vessels specialized in Search and Rescue (SAR) are conducted in areas of concentrated fishing, commercial, recreational, and other marine activities off the Pacific Coast.

Specialized SAR craft are stationed at Tofino, Sandspit, Old Bella Bella, Bamfield, French Creek, Port Hardy, Powell River, Campbell River, Ganges, Prince Rupert, and Vancouver. A SAR hovercraft is stationed at Vancouver International Airport (Sea Island).

During summer months the Canadian Coast Guard supplement their rescue vessels with rubber boats which can be tailored to any launching area in case of an emergency.

Air Rescue Unit

The Canadian Armed Forces maintain fixed wing aircraft and helicopters that are dedicated and equipped for SAR at Comox, B.C.

Airborne Life Raft

Canadian Forces fixed wing aircraft and helicopters are capable of dropping inflatable life rafts and survival equipment. The complete drop consists of a line 305m long with a ten-man dinghy at each end and a number of survival packages in between. This is dropped upwind to a distressed mariner; the dinghies inflate upon contact with the water.

Helicopter Evacuation

When evacuation of personnel by helicopter is planned, prepare a suitable hoisting area, preferably aft, with a minimum radius of 16m if possible. Booms, flagstaffs, stays, running rigging, antenna wires, etc., must be cleared away; secure awnings and all loose gear. At night, light the pick-up area but shade the lights so as not to blind the pilot. Allow the basket or stretcher from the helicopter to touch the deck before handling to avoid static shock. Do not secure any line from a helicopter to your vessel.

Rescue Auxiliary

The Canadian Coast Guard Auxiliary is a volunteer organization which has been organized by the Coast Guard. The auxiliary is comprised of experienced marine individuals to supplement the regular facilities by providing SAR services.

Distress Message

If you are in distress (you are threatened by grave and imminent danger) transmit the International Distress Call on VHF channel 16. If transmission on this frequency is impossible, any other available frequency on which attention might be attracted should be used. Any Marine Communications and Traffic Services Center or vessel that hears a distress message will reply and initiate SAR action.

Urgency Message

The transmission of a distress message may start an extensive sea and air search which sometimes continues for days in hazardous weather. Therefore, if you are in urgent need of assistance but not in distress, transmit the urgency signal on the frequencies described above. For further details concerning distress and urgency communications, mariners should consult Radio Aids to Marine Navigation (Pacific).

Ship-to-Air-Distress Signal

Ship-to-air-distress signal for use in Canadian waters has been designed in conjunction with the Canadian Forces Search and Rescue Authorities. The signal consists of a cloth painted or impregnated with fluorescent paint showing a disc and square to represent the ball and flag of the well known visual distress signal. Evaluation tests by Canadian Forces aircraft indicate that the most suitable color combination is black symbols on a background of orange-red fluorescent paint.

The smallest useful size is a cloth 1.8 by 1.1m showing symbols which have dimensions of 46cm and are the same distance apart. Grommets or loops should be fitted at each corner to take securing lines.

As the purpose of the signal is to attract the attention of aircraft it should be secured across a hatch or cabin top. In the event of foundering it should be displayed by survival craft.

Search and rescue aircraft will recognize this signal as a distress signal and will look for it in the course of a search. Other aircraft on seeing this signal are requested to make a sighting report to the Rescue Coordination Center.

The signals are commercially available but they may be made at home or aboard ship without difficulty. A length of unbleached calico, or similar material 1.8m long, together with a can of orange-red fluorescent spray paint are the principal requirements.

This signal is voluntary equipment, but it is hoped that Masters of tugs, fishing vessels, and pleasure craft will take advantage of this opportunity to increase the effectiveness of search and rescue operations.

Aircraft Signals

The following maneuvers performed in sequence by an aircraft mean that the aircraft wished to direct a surface craft towards an aircraft or a surface craft in distress. First, the aircraft circles the surface craft at least once. Second, the aircraft crosses the projected course of the surface craft close ahead at low altitude and rocks its wings, or opens and closes the throttle or changes the propeller pitch. Due to high noise levels onboard surface craft, the rocking the wings is the primary means of attracting attention. The above mentioned sound signals may be less effective and are regarded as alternative methods. Third, the aircraft heads in the direction in which the surface craft is to be directed. A repetition of such maneuvers has the same meaning.

The following maneuver by an aircraft means that the assistance of the surface craft to which the signal is directed is no longer required—The aircraft crosses the wake of the surface craft close astern at a low altitude and rocks its wings, or opens and closes the throttle, or changes the propeller pitch.

Radar Reflectors

Operators of disabled wooden craft that are, or may consider themselves to be, the object of a search are requested to hoist on a halyard or to otherwise place aloft any metallic object that would assist their detection by radar. All Coast Guard patrol vessels, planes, and some buoy tenders utilize this equipment and thus can continue searches in darkness and during other periods of low visibility if it can be assumed that the object of the search can be detected through the use of this aid.

Actual observations have shown that wooden hulls or other non-metallic objects are suited as radar targets according to the size, orientation, shape, and other radar reflecting qualities of the object. Their value as radar targets may be enhanced by the use of special radar reflecting devices properly oriented and placed as high above the water line as possible. The largest metallic object available should be used.

Signals

Mariners are informed that, if it is necessary for the Department of National Defense to take control of certain Canadian ports, signals will be displayed from a conspicuous position at or near the ports concerned or by an Examination or Traffic Control Vessel, as follows:

Canada—Port Control Signals

Meaning	Day signal	Night signal
Entry prohibited	Three red balls, vertically displayed	Three flashing red lights vertically displayed and visible all around the horizon
Entry permitted	—	Three green lights vertically displayed and visible all around the horizon
Movement within a port or anchorage prohibited	Blue flag	One green light between two red lights vertically displayed and visible all around the horizon

The lights described above will be carried in addition to the ordinary navigation lights of Examination Vessels.

Masters of vessels are warned that should they approach the entrance to a port which is being controlled by the Department of National Defense, they should not enter a declared Dangerous Area or approach boom defenses without permission, nor should they anchor or stop in a dangerous area or prohibited anchorage unless instructed to do so.

Masters are advised therefore to communicate with any government or port authority vessel found patrolling in the area to ascertain the recommended approach route to the port.

In certain circumstances it may be necessary to take special measures to examine, or to establish the identity of, vessels desiring to enter ports, and to control their entry.

This is the function of the Examination Service, whose officers will be afloat in Examination Vessels or Traffic Control Vessels. These vessels will wear the distinguishing flags of the Examination Service. The examination service special flag consists of a red and white center with a blue border, and the national flag of Canada.

Canadian signal regulations are subject to frequent additions and changes. U.S. Notice of Mariners No. 1 for the current year should be consulted.

Submarine Operating Areas

The Canadian Maritime Command operates one Victoria-class submarine based at Esquimalt, British Columbia.

Mariners are warned that they may encounter submarines anywhere off the Canadian coasts, particularly in the vicinity of the submarine's home port. United States Navy submarines are also frequently encountered off the coasts of Canada, particularly in the Strait of Juan de Fuca. Submarines may be surfaced or submerged, operating independently or with surface ships and/or aircraft.

When a surface ship is operating with a submarine the surface ship will fly the International Code Group "NE2" meaning "Submarines are exercising in this vicinity, you should proceed with great caution."

Vessels should steer so as to give a wide berth to any ship flying this signal. If, from any cause, it is necessary to approach it, vessels should proceed at slow speed until warning is given of the danger zone by flags, signal lamp, semaphore, etc. At all times, a good lookout should be kept for submarines whose presence may only be indicated by a periscope or snorkel showing above the water.

A submarine operating either independently or with a surface ship or aircraft, when at a depth too great to show its periscope, may indicate its position by releasing a "smoke candle" or a "flare."

Under certain circumstances warnings that submarines are exercising in specified areas may be issued as "CANHYDROPAC" messages on standard navigational warning broadcasts.

Distress Signals

A bottomed submarine which is unable to surface will try to indicate its position by the following methods:

1. Releasing an indicator buoy as soon as the accident occurs.
2. Firing red pyrotechnic signals.
3. Pumping out fuel or lubricating oil.
4. Releasing air bubbles.
5. Personnel or debris floating on the surface.

In any submarine accident, time is the most vital factor affecting the chances of rescue of survivors. At the first indication that a submarine accident has occurred, by sighting the signals described above or actually being in a collision with a submarine, an immediate report should be made by the quickest means possible, to the appropriate authority, as follows:

1. Atlantic Coast—Headquarters of Maritime Forces Atlantic at Halifax, telephone (902) 427-2501.
2. Pacific Coast—Headquarters of Maritime Forces Pacific at Esquimalt, telephone (604) 363-2425.
3. The nearest Marine Communications and Traffic Services (MCTS) Center.

The aim of a submarine rescue operation is to save lives and will have to achieve the following:

1. Fixing the exact position of the submarine.
2. To get a ship standing by to pick up survivors, with boasts already lowered, if practicable.
3. To inform the trapped personnel that help is at hand.
4. To get medical assistance to the recovered survivors.
5. To get a recompression chamber to the scene.
6. To get divers, rescue equipment, etc. on the scene to assist the submarine personnel.

There are Canadian Maritime Forces Atlantic and Maritime Forces Pacific organizations, designed to respond to a submarine search and rescue event, which are kept at an immediate readiness for action. It is clear, however, that any ship may at any time find evidence of a submarine disaster, if it takes prompt and correct action as described above, may be in a position to play a vital role.

There should be no reluctance to make a report of a suspected submarine accident because the observer has been unable to establish beyond any reasonable doubt that a submarine accident has occurred. The Canadian Maritime Forces Atlantic and Maritime Forces Pacific are prepared to react appropriately.

At any time between the accident and the arrival of assisting or rescue forces, conditions in the bottomed submarine may deteriorate to the point where the crew have to escape. Any ship finding an indicator buoy should not leave the position but should remain in the area, well-clear, ready to pick up survivors.

If the escape option is started, escapees will ascend nearly vertically from the bottomed submarine, either individually or in small groups. On arrival at the surface, they may be exhausted or ill, and the presence of an already lowered boat to assist in their recovery is very desirable. Some men may require recompression treatment, and it will be the aim of the Commander of either Canadian Maritime Forces Atlantic and Maritime Forces Pacific, as appropriate, to get such personnel to a recompression chamber as soon as possible.

In order that those trapped in the submarine know that help is at hand, Canadian Maritime Forces will drop up to 12 small charges, individually at 5-second intervals, into the sea. There is no objection to the use of small charges for this purpose, but it is vital that they are not dropped to close, since men in the process of making ascents are particularly vulnerable to underwater explosions and may easily receive fatal injuries; a distance of 0.25 mile is considered safe. Vessels can also indicate their presence by the intermittent running of an echo sounder on high power, or by banging on the outer skin of an underwater portion of the ship's hull with a hammer. Such sounds are likely to be heard by the submarine and should be carried out at frequent intervals.

Submarine Indicator Buoys

Canadian Victoria Class submarines are fitted with two indicator buoys, one at each end of the ship, which are tethered to the submarine by a mooring wire and can be released from inside in case of emergency or if for any reason the submarine is unable to surface. The buoys are marked either FORWARD or AFT to indicate which end of the submarine they were released and are all marked with the submarine's identification number.

The buoys, known as Type 639 Model 060, are made of aluminum and are cylindrical in shape. They are 76.2cm in diameter and 79.8cm high, with a cylindrical projection on the bottom about 16.5cm deep. There is a mooring bolt on the bottom, from which is suspended 1,000m of 1.3cm (circumference) steel mooring wire.

The buoy floats with a freeboard of about 15.2cm. The buoy has an extending vertical whip antenna, which extends to a height of 1.77m above the buoy.

A white light, which flashed twice per second for at least 40 hours, is mounted in the center of the top surface. In darkness and good weather, the visibility of the light without binoculars is 3.2km. A ring, carrying cat's eye reflectors, which will re-

flect searchlight beams from searching vessels, is fitted around the base of the light. Each buoy is painted international orange.

For identification purposes, the following inscriptions are carried on each buoy around the top surface:

1. In English—"S.O.S. H.M.C.S. (identification number) Finder inform Navy, Coastguard or Police. Do not secure to or touch."
2. In French—"S.O.S. SOUS-MARIN H.M.C.S. (numero d'identification) Prevenir immediament autorites maritimes. Defense de toucher."

The buoys are fitted with an automatic transmitting radio unit which is activated when the indicator buoy is released. The operating characteristics are, as follows:

1. 243.0 MHz—the sound is a high-pitched tone dropping to a low-pitched tone, then a brea. This is repeated and these repeating tones will trigger automatic-receiving SAR equipment.
2. GMDSS frequency 406.025 MHz—a 15-digit code is transmitted in digitized format. This code is received by satellite, which will correspond to the specific indicator buoy. The code is identified by the Rescue Coordination Centers.

Ships hearing these signals should immediately report their position, depth of water, and, if possible, an indication of signal strength. It the buoy is sighted in depths of water greater than 1,000m, it is certain to be adrift; this fact should also be reported as soon as possible.

Distress Radio Transmitting Buoys

Canadian Victoria Class submarines carry expendable communications buoys. These buoys, known as Type ECB 680, are silver-colored radio rescue spar buoys. They are about 10cm in diameter and 60cm long and are powered by a lithium cell. Upon reaching the surface, the buoy transmits a SABRE tone radio distress signal on 243.0 MHz for about 8 hours. The buoy is free-floating and is not attached to the submarine.

Time Zone

The Time Zone description for the W coast of Canada is UNIFORM (+8). Daylight Savings Time (TANGO (+7)) is maintained from the first Sunday in April until the Saturday before the last Sunday in October.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) on the W coast of Canada are, as follows:

1. In the Strait of Juan de Fuca and its approaches. (IMO approved)
2. In Puget Sound and approaches in Haro Strait, Boundary Pass, and the Strait of Georgia. (IMO approved)
3. Vancouver Harbor (Government of Canada)

U.S. Embassy

The U.S. Embassy is situated at 490 Sussex Drive, Ottawa, Ontario.

The mailing address is P.O. Box 5000, Ogdensburg, NY 13669-0430.

U. S. Embassy Canada Home Page
http://www.usembassy.gov

Vessel Traffic Service

The purpose of this section is to describe the ship reporting procedures to be followed by vessels when within or intending to enter the waters of Western Canada.

Responsibilities

There is no intention on the part of the Canadian Coast Guard to attempt to navigate or maneuver ships from a shore station and nothing in this publication overrides the authority of the master for the safe navigation of the ship. Information passed to the master is intended to assist in the safe conduct of the ship.

A Marine Communications and Traffic Services (MCTS) Officer may, under specific circumstances:

1. Direct the master, pilot, or person in charge of the deck watch of the vessel to provide any pertinent information in respect of that vessel that may be specified in the direction.
2. Direct the vessel to use any radio frequencies in communications with coast stations or other vessels that may be specified in the direction.
3. Direct the vessel, at the time, between the times or before or after any event that may be specified in the direction to:
   a. Leave a VTS Zone.
   b. Leave or refrain from entering any area within a VTS Zone that may be specified in the direction.
   c. Proceed to or remain at any location within a VTS Zone that may be specified in the direction.

A vessel, as well as the master, pilot, or person in charge of the deck watch of the vessel, shall comply with a direction given to it or them by the MCTS Officer. Notwithstanding, the master, pilot, or person in charge of the deck watch of the vessel may take any action that may be required to ensure the safety of the ship or any other ship.

The master of a ship shall ensure that before the ship enters a VTS Zone the ship's radio equipment is capable of receiving and transmitting radio communications on the appropriate VTS sector frequency.

Traffic Clearance

A Traffic Clearance is an authorization for a ship to proceed subject to such conditions as may be included in the authorization. The Traffic Clearance is predicated upon ship report information and known waterway/traffic conditions. A traffic clearance does not eliminate the need for other authorizations required by legislation or by-laws.

Should any factor upon which the clearance is predicated alter to the detriment of safe navigation, the clearance may be delayed or other conditions may be attached to the clearance.

A traffic clearance is required prior to:

1. Entering a VTS Zone.
2. Commencing a departure maneuver.

3. Commencing a maneuver that may be detrimental to safe navigation.

4. Proceeding after being stranded, stopped due to breakdown of main propulsion machinery or steering gear, or having been involved in a collision.

Communications

Radiotelephone procedures used in communicating with an MCTS center are those specified by the International Telecommunications Union in the *Manual for Use by The Maritime Mobile and Maritime Mobile Satellite Services.*

A continuous listening watch shall be maintained on the appropriate VTS sector frequency on radio equipment located:

1. At any place on board the ship, where the ship is at anchor or moored to a buoy.

2. In the vicinity of the ship's conning space, where the ship is underway.

The continuous listening watch may be suspended if an MCTS officer directs the ship to communicate with coast stations and/or other ship stations on a different VHF radio frequency.

All times given in VHF reports should be in local time and in accordance with the 24-hour clock system.

Navigation safety calls on the designated VTS frequencies should be kept to the minimum consistent with the safety requirement of the situation.

Communication Difficulties.—Where a ship, for any reason other than shipboard radio equipment failure, is unable to obtain the required Traffic Clearance or after receiving a Traffic Clearance, is unable to maintain direct communication with the appropriate MCTS Center, the master may nevertheless proceed along the route, but shall take all reasonable measures to communicate with the appropriate MCTS Center as soon as possible.

Shipboard Radio Equipment Malfunction.—In the event of a shipboard radio equipment failure where the ship is unable to obtain the required Traffic Clearance or, after receiving a Traffic Clearance, is unable to maintain direct communication with the appropriate MCTS Center, the vessel shall:

1. If it is in a port where repairs can be made, remain in the port until the vessel is able to establish communications in accordance with the *Vessel Traffic Services Zone Regulation*s.

2. If it is not in a port where repairs can be made, proceed to the nearest reasonably safe port or anchorage on its route and remain their until the vessel is able to establish communications in accordance with the *Vessel Traffic Services Zone Regulations*.

Zone Descriptions

Western Canada.—The Western Canada VTS Zone consists of all Canadian waters on the W coast of Canada and referred to in the *Vessel Traffic Services Zone Regulations*.

Local Zones.—West Coast VTS Local Zones have been established for traffic to Prince Rupert, Tofino, and Vancouver. The appropriate Sailing Directions (Enroute) volumes should be consulted.

Zone Application

Western Canada Offshore.—With respect to Western Canada VTS Zones, the *Vessel Traffic Services Zone Regulations* require a report to be made at least 24 hours before the ship enters a VTS Zone from seaward, including Alaska, or as soon as possible where the ETA at that VTS Zone is less than 24 hours after the ship departs from the last port of call, as follows*:*

1. Every ship of 500 gross tons or more.

2. Every ship that is engaged in towing or pushing one or more vessels, where the combined tonnage of that ship and its tow amounts to 500 gross tons or more.

3. Every ship carrying a pollutant or dangerous goods, or engaged in towing or pushing a vessel carrying a pollutant or dangerous goods as prescribed in the following:

a. Oil Pollution Prevention Regulations.

b. Pollutant Substances Regulations.

c. Dangerous Goods Shipping Regulations.

d. International Maritime Dangerous Goods Code (IMDG).

e. Dangerous Chemicals and Noxious Liquid Substances Regulations.

Participation is mandatory; however, vessels between 300 and 500 gross tons are also encouraged to participate fully to receive the maximum benefit.

Local VTS Zones.—For vessels within or about to enter a Western Canada VTS Zone, the *Vessel Traffic Services Zone Regulations* apply in respect of:

1. Every ship 20m or more in length.

2. Every ship engaged in towing or pushing any vessel or object, other than fishing gear, where:

a. The combined length of the ship and any vessel or object towed or pushed by the ship is 45m or more.

b. The length of the vessel or object being towed or pushed by the ship is 20m or more in length.

With respect to the VTS Zones specified in the *Vessel Traffic Services Zone Regulations,* these regulations do not apply in respect of:

1. A ship engaged in towing or pushing any vessel or object within a log booming ground.

2. A pleasure yacht that is less than 30m in length.

3. A fishing vessel that is less than 24m in length and not more than 150 gross tons.

Reporting Requirements

Change in information.—A report shall be made whenever a significant change occurs in the information previously provided in any report made pursuant to the *Vessel Traffic Services Zone Regulations*.

Non-routine reports.—Pursuant to the *Vessel Traffic Services Zone Regulations*, a report indicating the vessel's name, position, and a description of the incident shall be made prior to the vessel proceeding, as soon as the master becomes aware of any of the following conditions:

1. The occurrence on board the ship of any fire.

2. The involvement of the ship in a collision, grounding, or striking.

3. Any defect in the ship's hull, main propulsion systems, steering systems, radars, compasses, radio equipment, anchors, or cables.

4. Any discharge or probable discharge of a pollutant from the ship into the water.

5. Another ship in apparent difficulty.

6. Any obstruction to navigation.

7. Any aid to navigation that is functioning improperly, damaged, off-position, or missing.
8. The presence of any pollutant in the water.
9. The presence of a ship that may impede the movement of other ships.
10. Any ice and weather conditions that are detrimental to safe navigation.

Note.—Items 6, 7, and 8 are not required if the information has been previously promulgated by a Notice to Shipping.

Mariners are encouraged to provide, on a voluntary basis, any information pertaining to charts and publications which may not be on board so that arrangements can be made to embark the necessary items.

Offshore Report

The *Vessel Traffic Services Zone Regulations* require a report to be made at least 24 hours before the ship enters a VTS Zone from seaward, including Alaska, or as soon as possible where the ETA at that VTS Zone is less than 24 hours after the ship departs from the last port of call. The following information may be required:

1. The name of the ship.
2. The radio call sign of the ship.
3. The name of the master of the ship.
4. The position of the ship.
5. The time the ship arrived at the position.
6. The course of the ship, if any.
7. The speed of the ship, if any.
8. The prevailing weather conditions (including ice, if applicable).
9. The estimated time that the ship will enter the VTS Zone.
10. The estimated time the ship will depart the berth.
11. The destination of the ship.
12. The ETA of the ship at the destination.
13. The intended route the ship.
14. The name of the last port of call of the ship.
15. The draft of the ship.
16. Any dangerous goods, listed by class, or pollutant, that is carried on board the ship or vessel being towed or pushed by the ship.
17. Revoked.
18. Any defect in the ship's hull, main propulsion machinery, steering system, radars, compasses, radio equipment, anchors or cables.
19. Any discharge, or threat of discharge, of a pollutant from the ship into the water, and any damage to the ship that may result in the discharge of a pollutant from the ship into the water.
20. The name of the Canadian or United States agent of the ship.
21. The date of expiration of a certificate referred to in Article VII of the International Convention on Civil Liability for Oil Pollution Damage, 1969/1992; the International Oil Pollution Prevention Certificate; the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk; the Certificate of Fitness; the Certificate of Compliance; and the ISM Safety Management Certificate and the ISM Document of Compliance, if any, issued to the ship.

Cooperative Vessel Traffic Services (CVTS) Advance Report

The CVTS Advance Report is a cooperative voluntary measure by the Canadian Coast Guard and the United States Coast Guard to reduce the reporting burden on ships calling on collective ports and to facilitate transits through canadian and U.S. waters. This one report will satisfy the Canadian VTS Offshore Report, the U.S. Notice of Arrival Report, and the State of Washington Advance Notice of Entry Report.

Ninety-six hours and 24 hours prior to entering the territorial waters of the W coast of Canada, all vessels 300 gross tons or greater, including tugs and tows, report all of the following information, by the owner, master, agent or person in charge of a vessel directly to the Marine Communications and Traffic Services (MCTS) Regional Marine Information Center (RMIC) in the format below via any of the following methods:

1. Via INMARSAT telex: 04352586 CGTC VAS VCR.
2. Via any Canadian Coast MCTS Center free of charge.
3. Directly to CVTS Offshore by fax: (604) 666-8453.
4. Directly to Vancouver MCTS Center via E-mail, in plain text only, as follows:

offshore@rmic.gc.ca

For voyages less than 24 hours in duration, a report must be submitted prior to departure. A report must also be submitted if any ETA changes by more than 6 hours.

CVTS Home Page
http://www.piersystem.com/external/index.cfm? CID= 398

Steering Gear and Main Propulsion System Testing

Vessels of 1,600 grt and over, bound for ports in the United States, are required to inspect and fully test their steering gear and main propulsion machinery, both ahead and astern, 12 hours prior to entering the Strait of Juan de Fuca.

CVST Advance Report Format

Designator	Required Information
ALPHA	Vessel name, call sign, flag, and IMO International Number (Lloyd's Register Number). If vessel does not have an assigned IMO International Number, use the Official Number of the vessel.
BRAVO	Current date and time (UTC).
CHARLIE	Current position.
ECHO	True course.

CVST Advance Report Format	
Designator	**Required Information**
FOXTROT	Speed in knots and tenths of knots.
GOLF	Name of port or place of departure.
HOTEL	Date, Time, and point of entry into the CVTS and the ETA (UTC) to Buoy J at the entrance to the Strait of Juan de Fuca. (The ETA at Buoy J does not have to be reported for vessels not using the Strait of Juan de Fuca.)
INDIA	Destination and ETA (UTC) to port of destination.
OSCAR	Maximum present static draft, in meters.
PAPA	Cargo on board. If bound for a Canadian port, dangerous or pollutant cargo by name, UN Number, or IMDG Code Number, if applicable.
QUEBEC	Any defects or deficiencies in hull, steering gear, propulsion machinery, navigation equipment, anchors or cables, or required radio communications equipment; incomplete complement of officers and crew as required by flag state; or any other hazardous conditions.
SIERRA	On scene weather, if severe.
TANGO	Vessel representative and/or owner.
UNIFORM	Vessel size and type.
XRAY-1	If bound for a Canadian port, expiration date of: 1. International Oil Pollution Prevention Certificate, or Certificate of Compliance. 2. International Noxious Liquid Substance Certificate, or Certificate of Compliance. 3. Certificate of Fitness (Chemical tanker). 4. International Convention on Civil Liability for Oil Pollution Damage Certificate of Insurance. 5. Indicate if a shipboard oil pollution emergency plan is on board. 6. Indicate if oil spill response arrangements are in effect with a designated spill response organization for your port of destination.
XRAY-2	If bound for a U.S. port: 1. Indicate intention to transfer fuel and/or lube oil; if yes, specify type and amount. 2. Indicate name of Washington State spill contingency plan. 3. Classification society of vessel. 4. Name and phone number of a 24-hour point of contact for vessel-related concerns. 5. For voyages less than 24 hours, report prior to departure. A report must also be submitted if the ETA changes by more than 6 hours.
XRAY-3	Vessel MMSI number.
XRAY-4	ISM Certificate, if applicable, and if any issued to the vessel—What is the name of the Issuing Authority? ISM Safety Management Certificate—What are the date of issue and the date of expiration? ISM Document of Compliance—What are the date of issue and the date of expiration?
XRAY-5	Ballast water—If in ballast, has your vessel: 1. Conducted open ocean ballast exchange at least 200 nautical miles offshore since your last port of call? YES or NO. 2. Implemented a Ballast Water Management Plan? YES or NO. 3. Made the required notification and reports to Canada/United States as applicable? YES or NO. Ballast Water Notification/Reports required before the vessel arrives in its first port of call, as follows: 1. If bound for the United States: • U. S. Coast Guard c/o Smithsonian—fax: (301) 261-4319. • Electronic report to the National Ballast Clearing House at http://invasions.si.edu/ballast.htm Look for the “Ballast Water Reporting Form” under “Site Map” • E-mail: ballast@serc.si.edu • Note.—Information and updates can be found at http://invasions.si.edu 2. If bound for Canada, report to the Marine Communication and Traffic Services via the Regional Marine Information Center by one of the following means: • Telephone: (604) 666-6012. • Facsimile: (604) 666-8453. • E-mail: rmic-pacific@pac.dfo-mpo.gc.ca

When transiting on a W coast approach to the entrance to the Strait of Juan de Fuca, vessels are strongly encouraged to conduct these tests prior to crossing longitude 125˚25'W. Vessels on a coastwise voyage not exceeding a distance of 25 miles off the entrance to the strait are encourage to conduct these tests as far as practicable from shore and maintain radio contact with Tofino Traffic when changing direction of propulsion.

If testing at sea must be delayed for safety reasons, vessels should report this to the CVTS and request permission to conduct these tests in the open, but more protected, waters of the Strait of Juan de Fuca before arriving at the pilot station.

These tests shall not be conducted in the Traffic Separation Scheme or within 12 miles of the coast without prior permission from the CVTS.

The tests should be conducted farther from the coast if onshore wind and sea conditions are server and there is no tug immediately available. This should be coordinated with the CVTS.

Local VTS Zone Reports

With respect to Local VTS Zones as specified in the *Vessel Traffic Services Zone Regulation*s, the master of a ship shall report to the MCTS Officer in accordance with the regulations described below.

Information Required.—Depending on the reporting requirements, the following information may be required to be reported:

1. The name of the ship.
2. The radio call sign of the ship.
3. The position of the ship.
4. Estimated time that the ship will enter the VTS Zone.
5. The destination of the ship.
6. Estimated time the ship will arrive at its destination.
7. Whether any pollutant or dangerous goods cargo is carried on board the ship or any vessel or object being towed or pushed by the ship.
8. The estimated time that the ship will depart the berth.
9. The estimated time at which the ship will next arrive at a location requiring a report.

Entering a Zone.—At least 15 minutes before a ship intends to enter a zone, a report shall be made specifying the information contained in Items 1, 2, 3, 4, 5, 6, and 7 above.

Ships in possession of a valid Traffic Clearance are not required to provide this report.

Arriving at a Calling-In-Point (CIP).—When a ship arrives at a CIP, a report shall be made specifying the information contained in Items 1, 3, and 9 above.

Arriving at a Berth.—As soon as practicable after a ship arrives at a berth, a report shall be made specifying the information contained in Items 1 and 3 above.

Departure Maneuvers.—A departure maneuver is defined as an operation during which a vessel leaves a berth and gets safely underway. Immediately before commencing a departure maneuver, a report shall be made specifying the information contained in Items 1, 2, 3, 5, 6, 7, and 8 above.

Immediately after completing a departure maneuver, a report shall be made specifying the information contained in Items 1, 2, and 9 above.

Maneuvers.—A Traffic Clearance is required 15 minutes prior to commencing any maneuver, such as:

1. A compass adjustment.
2. The calibration and servicing of navigational aids.
3. A sea trial.
4. A dredging operation.
5. The laying, picking up, and servicing of submarine cables; or any other maneuver that may be detrimental to safe navigation.

Prior to beginning the maneuver, a report shall be made specifying the information listed in Items 1 and 3 above, plus a description of the intended maneuver.

As soon as practicable after the maneuver is completed, a report describing the maneuver just completed shall be made.

CHILE

General

Chile is located in the S part of South America, bordering the South Atlantic Ocean and the South Pacific Ocean, between Argentina and Peru.

The climate is extreme desert in the N; Mediterranean, with wet winters and dry summers in the central part of the country; a cool and damp temperate zone in the S; and wet and stormy in the extreme S.

The terrain consists of low coastal mountain, a fertile central valley, and the rugged Andes Mountains in the E.

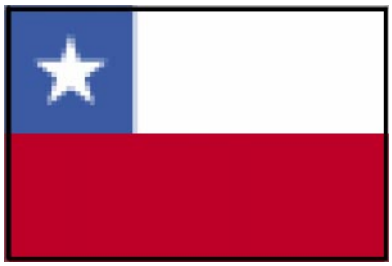
Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Chilean peso, consisting of 100 centavos.

Government



Chile is a republic. The country is divided into 13 regions.

Chile is governed by a directly-elected President serving a non-renewable 6-year term. The bicameral National Congress consists of a 49-member Senate (38 directly-elected members serving 8-year terms, eight designated members serving 6-year terms, and two former Presidents serving for life) and a 120-member directly-elected Chamber of Deputies serving 4-year terms.

The legal system is based on the Code of 1857 from Spanish law and subsequent codes influenced by French and Austrian law.

The administrative capital is Santiago. The legislative capital is Valparaiso.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Holy Saturday	Variable
May 1	Labor Day
May 21	Battle of Iquique/Navy Day
June 7	Corpus Christi
June 29	St. Peter and St. Paul
August 15	Assumption Day
September 18	Independence Day
September 19	Army Day
November 1	All Saints' Day
December 8	Immaculate Conception
December 25	Christmas Day
December 31	New Year's Eve

Industries

The main industries are based on copper, other minerals, foodstuff, fish processing, iron and steel, wood and wood products, transport equipment, cement, and textiles.

Languages

Spanish is the official language.

Navigational Information

Enroute Volume

Pub. 125, Sailing Directions (Enroute) West Coast of South America.

Maritime Claims

The maritime territorial claims of Chile are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200/350 miles.

* Claims straight baselines.

Maritime Boundary Disputes

Dispute with Peru over the economic zone delineated by the maritime boundary.

Pilotage

Pilotage is compulsory for all foreign vessels entering or leaving a port or navigating the channels of the republic.

Pilotage is compulsory in Estrecho de Magellanes. Details can be found in Pub. 124, Sailing Directions (Enroute) East Coast of South America.

Pollution

The discharge of oil or oil products is prohibited within 50 miles of the coast of Chile and the off-lying Chilean islands.

Vessels are prohibited from pumping bilges or jettisoning rubbish and waste materials within 10 miles of a Chilean port.

Vessels entering ports in Chile must exchange ballast water at least once before entering port. This exchange of ballast water must occur not less than 12 miles from the coast.

A vessel loading or discharging ballast must do so in the berth designated by the Port Authority, and must take precautions against the spilling of ballast into the sea.

All vessels within the Chilean Ship Reporting System (CHILREP) are requested to report incidents involving dangerous goods, harmful substances, and maritime pollutants. Further information on the reports and the format of these reports can be found in the Chilean Ship Reporting System (CHILREP) under Regulations—Vessel Reporting System.

Regulations

International Ship and Port Facility (ISPS) Code

Vessels not certified under the ISPS Code are not permitted to call at Chilean ports.

General

No small craft or boat may come alongside a vessel entering a port until after it has been visited by the officers of the Health Authority, the Port Captain, and the Customs Office.

After the inspection, the Port Captain will grant pratique. Warships are not obliged to receive these visits.

Masters of merchant vessels must report during the above visits whether any sick or injured persons are on board, being particularly careful to report any contagious diseases.

On the arrival of a vessel in a port, the Maritime Authority will assign the berth to be occupied. Vessels may not shift berths without the permission of the Port Captain, except in cases of danger or absolute necessity, which must be reported immediately. The Port Authority will also determine the number of anchors to be used, their direction, and the amount of chain on each, according to the season.

No vessels shall begin working cargo until properly moored, and until the cargo handling gear is in good order and has been inspected.

Vessels discharging, loading, or transferring explosive or inflammable cargoes must display a red flag.

It is forbidden to discharge any firearms, either with blanks or live ammunition, or to throw explosives overboard from either warships or merchant vessels lying in a port.

In the event of bad weather vessels anchored in a port must drop their second anchor, hoist their boats, and have their engines on stand by. The Master and crew must remain on board. When bad weather is indicated, a signal will be displayed by the Port Authority.

In the case of fire or stranding of any vessel, every other vessel in the port is obliged, at the request of the Port Authority, to lend all assistance and gear such as anchors, lines, and towing facilities, and such personnel as necessary.

After sunset it is forbidden to land passengers on any part of the shore, except the principal pier or spot designated by the Port Authority.

No merchant vessel's boat may go outside the limits of the port without written permission from the authorities.

Crews of vessels are forbidden to go ashore with knives, swordcanes, or firearms.

It has been reported that light dues are levied at the first Chilean port of call, for which a receipt is issued. The receipt, valid for 1 calendar year, must be presented at each Chilean port of call as proof of payment. Reports have indicated the charges are substantial; however, they may be waived for foreign warships on official visits.

Information concerning port charges and light dues is obtained from the vessel's agent or diplomatic representative.

Local authorities or the appropriate agency of the Chilean government may also be consulted when planning a voyage.

Notice of Arrival

All vessels bound for a Chilean port must send their ETA to the Port Captain 24 hours in advance. The message should state the following information:

1. Vessel name and flag.
2. ETA (date and time).
3. Number of passengers (including none, if applicable).
4. Quantity of hazardous cargo for the port or in transit (including none, if applicable).
5. State of health of crew and/or passengers.
6. Draft.

Vessels bound for a Chilean port must establish contact with the Port Captain on VHF channel 16 when 20 miles from the port.

Automatic Identification System (AIS)

Vessels transiting Chilean waters must be equipped with an Automatic Identification System (AIS) capable of sending and receiving information on the ship's identity, cargo, position, and other information, such as the ship's draft, ETA, and any other updated information.

Port Hours

Ports in Chile open at 0600 from October 15 to April 14, and at 0700 for the rest of the year. They are closed at 2100 throughout the year except in cases of emergency. In the Provincia de Magallanes, the ports close at 2200 in November, December, and January

Reporting Requirements for Inland Waters

Foreign vessels navigating the inland waters of Chile must report their positions, via the nearest coast radio station, daily at 1200 and 2400 UTC.

Vessels navigating in Chilean channels should maintain a listening watch on 2182 kHz. Upon sighting another vessel, contact should be established on 2182 kHz prior to switching to VHF channel 16.

In addition, vessels should make a general call every 10 minutes, from 10 miles prior to entering a dangerous passage until clear of the passage, stating:

1. Vessel's identity.
2. Position.
3. ETA at next dangerous passage.

Vessel Reporting System

The Chilean Ship Reporting System (CHILREP) is a voluntary system operated by the General Directorate of the Maritime Territory and Merchant Marine, which is a Directorate of the Chilean Navy. The CHILREP system is a ship reporting system established with the following objectives:

1. To limit the time between the loss of a vessel and the initiation of search and rescue action, in cases where no distress signal is sent out.
2. To limit the search area for a rescue action.
3. To provide up-to-date information on shipping resources available in the area, in the event of a search and rescue incident.

The coverage of CHILREP and the Chilean maritime search and rescue area as advised to the International Maritime Organization are identical. The boundary coordinates are, as follows:

a. 18˚21.0'S, 70˚22.9'W.
b. 18˚21.0'S, 131˚00.0'W.
c. The Antarctic coast at 131˚00.0'W.
d. 55˚22.9'S, 65˚43.6'W.
e. 56˚22.8'S, 65˚43.6'W.
f. 56˚22.8'S, 67˚16.0'W.
g. 58˚21.1'S, 67˚16.0'W.
h. 58˚21.1'S, 53˚00.0'W.
i. The Antarctic coast at 53˚00.0'W.

Upon departure from a Chilean port, or when entering the CHILREP area, a Sailing Plan (SP) is to be sent, as follows:

1. When the vessel is at sea, the report is to be sent through one of the following coast radio stations:
   a. Antofagasta.
   b. Isla de Pascua (Easter Island).
   c. Valparaiso Playa Ancha.
   d. Talcahuano.
   e. Puerto Montt.
   f. San Pedro.
   g. Magallanes.
   h. Wollaston.
2. When the vessel is in a Chilean port, the report can be sent, as follows:
   a. Through any Chilean coast radio station which accepts public correspondance.
   b. To Directemar Valparaiso, as follows:

Telephone:	+56(0)32-281022
	+56(0)32-208474
	+56(0)32-208486
Facsimile:	+56(0)32-281099
E-mail:	cbvradio@directemar.cl

The SP is relayed to the CHILREP service, where a computerized plot is maintained for the vessel position.

A Position Report (PR) is sent once a day between 1200 and 1600 UT (GMT) so that a report is received every 24 hours.

Should a vessel at any time be in a position more than 2 hours steaming from the position that would be predicted from the last SP or PR, then a Deviation Report (DR) must be sent. Failure to do so will result in the search being concentrated in the wrong area in the event of a missed report, and the possibility that survivors from a stricken ship may not be found.

On arrival at the ship's destination or on departure from the CHILREP area, a Final Report (FR) is to be sent. CHILREP is a positive reporting system in that, should an expected report become overdue, actions which include worldwide communications checks, the alerting of ships in the vicinity, and the launching of search aircraft will be initiated.

In addition to the CHILREP system, there is a National Ship Position System which requires that every foreign vessel bound for a Chilean port must report its arrival at least 24 hours in advance. When foreign vessels navigate inland waters of the Chilean Republic they must report their position at 1200 and 2400 UTC. Chilean flag vessels must also report their position at 1200 and 2400 UT(GMT) daily. In all other conditions the system requires a daily report between 1200 and 1600 UTC.

The basic CHILREP format and the required information are contained in the accompanying table.

CHILREP Reports—Format and Information Required

Identifier		Sailing Plan				PR	DR	Final Report		DG	HS	MP
		SP-1	SP-2	SP-3	SP-4			FR-1	FR-2			
A	Vessel name and call sign.	X	X	X	X	X	X	X	X	X	X	X
B	Date and time of report (6 digits—date (2 digits), hour (2 digits), and minutes (2 digits)). Reports are to be in Universal Coordinated Time (UTC), to be indicated by the suffix Z.					X	X			X	X	X
C	Position—Latitude (4 digits in degrees and minutes) N or S and Longitude (5 digits in degrees and minutes) W.					X	X			X	X	X

CHILREP Reports—Format and Information Required												
Identifier		Sailing Plan				PR	DR	Final Report		DG	HS	MP
		SP-1	SP-2	SP-3	SP-4			FR-1	FR-2			
D	Geographical position (optional). Used when sailing near the coast or in inland waters. Give well-known name(s) of clearly identifiable landmark(s).											
E	True course anticipated until next reporting time (3 digits). When more than one course is to be used, enter Various; this will be interpreted as being the normal course(s) a vessel will follow on that particular passage. If this is not the case clarification should be made.					X					X	
F	Speed (the anticipated average speed the vessel will make until the next report).	X	X	X	X	X	X				X	
G	Last port of call (when entering CHILREP area only).	X			X							
H	Date/time (using format shown in B) and point of entry into CHILREP system. The point of entry is the latitude/longitude at which the vessel is entering the CHILREP area, or the Chilean port from which the vessel is departing.	X	X	X	X							
I	Destination and ETA (with date).		X		X		X					
J	Whether a pilot is carried on the vessel. Notification of pilot is required when route considers inland waters navigation.			X								
K	Date/time (using format shown in B) and point of exit from CHILREP system. The point of exit is the latitude/longitude at which the vessel is leaving the CHILREP area, or the Chilean port the vessel is to arrive at.	X	X	X	X			X	X			
L	Route (the vessel's intended track). State whether Great Circle (GC), Rhumb Line (RL), or Coastal, with waypoints being followed, expressed in latitude and longitude. Courses are not required if waypoints are mentioned.	X	X	X	X						X	

CHILREP Reports—Format and Information Required												
Identifier		Sailing Plan				PR	DR	Final Report		DG	HS	MP
		SP-1	SP-2	SP-3	SP-4			FR-1	FR-2			
M	Coast radio stations or maritime communications stations monitored. Include INMARSAT and SELCALL number, if fitted. List stations which the vessel normally works to contact managers, owners, agents, etc., in addition to the Chilean maritime communications stations monitored.	X	X	X	X					X	X	X
N	Nominated daily reporting time (using format shown in B). Daily reporting times are advised to be made within the period from 1200 to 1600 UTC.	X	X	X	X						X	
O	Draft.											
P	Cargo (brief identification).									X[1]	X[2]	X[1]
Q	Defects or other limitations.									X	X[3]	X[3]
R	Reports of any pollution seen.									X[4]	X[5]	X[4]
S	Weather conditions in the area.									X[6]	X[6]	X[6]
T	Vessel's agents.									X[7]	X[7]	X[7]
U	Vessel's type and size.									X	X	X
V	Medical personnel carried.	X	X	X	X							
W	Number of persons on board.											
X	Remarks.	X	X	X		X	X[8]	X[9]	X[9]		X[10]	X[10]

CHILREP Key	
X	Required information. Other designators may be included at the discretion of the Master or when relevant to the type of report being sent.
X[1]	**DG—**This information is required if the condition of the vessel is such that there is danger additional losses of packaged dangerous cargo into the sea. **MP—**This information is required in the event of probable discharge. The following details should be included: 1 Correct technical name(s) of cargo. 2 UN number(s). 3 IMO hazard class(es). 4 Name(s) of manufacturer(s), when known, or consignee(s) or consignor(s). 5 Types of packages, including identification marks. Specify whether portable tanks or tank vehicles, whether vehicle or freight container, or other transport unit containing packages. Include official registration marks and numbers assigned to the unit. 6 An estimate of the quantity and likely condition of the cargo. Information not immediately available should be sent in a supplementary message or messages.

CHILREP Key	
X^2	The following details should be included: 1 Type of oil or the correct technical name(s) of the noxious liquid substance on board. 2 UN number(s). 3 Pollution category (A, B, C, or D) for noxious liquid substances. 4 Name(s) of manufacturer(s) of substances, if appropriate, when known, or consignee(s) or consignor(s). 5 Quantity. Information not immediately available should be sent in a supplementary message or messages.
X^3	The following details should be included: 1 Condition of the vessel. 2 Ability to transfer cargo/ballast/fuel. Information not immediately available should be sent in a supplementary message or messages.
X^4	The following details should be included: 1 Correct technical name(s) of cargo. 2 UN number(s). 3 IMO hazard class(es). 4 Name(s) of manufacturer(s), when known, or consignee(s) or consignor(s). 5 Types of packages, including identification marks. Specify whether portable tanks or tank vehicles, whether vehicle or freight container, or other transport unit containing packages. Include official registration marks and numbers assigned to the unit. 6 An estimate of the quantity and likely condition of the cargo. 7 Whether lost cargo floated or sank. 8 Whether loss is continuing. 9 Cause of loss. Information not immediately available should be sent in a supplementary message or messages.
X^5	The following details should be included: 1 Type of oil or the correct technical name(s) of the noxious liquid discharges into the sea. 2 UN number(s). 3 Pollution category (A, B, C, or D) for noxious liquid substances. 4 Name(s) of manufacturer(s) of substances, if appropriate, when known, or consignee(s) or consignor(s). 5 An estimate of the quantity of the substances. 6 Whether lost substances floated or sank. 7 Whether loss is continuing. 8 Cause of loss. 9 Estimate of the movement of the discharge or lost substances, giving current position, if known. 10 Estimate of the surface area of the spill, if possible. Information not immediately available should be sent in a supplementary message or messages.
X^6	When reported, the following items are recommended: Pressure (Pa) (4 digits). Wind direction and force in knots (5 digits). Air and water temperature, when available, in ˚C. Dew point (in degrees and tenths) (3 digits) in ˚C. Vessels which anticipate passing through areas of severe weather conditions or are experiencing severe weather are urged to report their position at more frequent intervals.
X^7	Name, address, telex, and telephone number of the vessel's owner and representative (charterer, manager or operator of the vessel, or their agent).
X^8	Include the reason for the deviation (speed reduction due to change ion weather, change of destination, etc.).
X^9	Must include the words Final Report.
X^{10}	The following details should be included: 1 Actions being taken with regard to the discharge and the movement of the vessel. 2 Assistance or salvage efforts which have been requested or which have been provided by others. 3 The master of an assisting or salvage vessel should report the particulars of the action undertaken or planned. Information not immediately available should be sent in a supplementary message or messages.

Sailing Plan Report (CHILREP SP).—The SP contains information necessary to initiate a plot and give an outline of the vessel's intended passage. An SP should be sent within 24 hours prior or up to 2 hours after entry into the CHILREP area

or departure from a port within the CHILREP area, in accordance with one of the following scenarios:

1. SP-1 submitted on entering the CHILREP area
2. SP-2 submitted on departure from a port within the CHILREP area to a port outside the CHILREP area. The report may be submitted prior to sailing and up to 2 hours after departure.
3. SP-3 submitted on departure from a port within the CHILREP area to a port within the CHILREP area. The report may be submitted prior to sailing and up to 2 hours after departure.
4. SP-4 submitted when transiting the CHILREP area from and to a port not in the CHILREP area.

Position Report (CHILREP PR).—A PR should be sent daily between 1200 and 1600 UT(GMT). The PR must reflect the position, course, and speed of the ship at the time of the report. If it is necessary to alter the nominated daily reporting time, the alteration should be shown in the PR sent before the change. The information contained in the PR will be used to update the computerized plot.

Deviation Report (CHILREP DR).—A DR must be sent should a vessel, at any time, be in a position more than 2 hours steaming from the position that would be predicted from the last SP or PR. Line X of the DR should contain the reason for the deviation (speed reduction due to weather, change of destination, etc.).

Final Report (CHILREP FR).—An FR contains the information which terminates the vessel's participation in the CHILREP system. Line X of the FR must include the words "Final Report." An FR should be sent in accordance with one of the following scenarios:

1. FR-1 submitted prior to or on arrival at a port within the CHILREP area.
2. FR-2 submitted when a vessel has departed from the CHILREP area. This report should be sent as soon as practicable

Other reports.—All vessels within the CHILREP system are requested to report incidents involving the following:

1. **Dangerous Goods Report (CHILREP DG).**
2. **Harmful Substances Report (CHILREP HS).—**Vessels engaged in or requested to engage in an operation to render assistance or undertake salvage should also send this report.
3. **Maritime Pollutants Report (CHILREP MP).—**Vessels engaged in or requested to engage in an operation to render assistance or undertake salvage should also send this report.

Overdue Reports.—To avoid unnecessary search action, it is important that vessels report at the nominated reporting time each day and send their FINAL REPORT when leaving the CHILREP area. If a vessel is unable to pass a position report due to unserviceable radio equipment or illness of the radio officer, all attempts must be made to pass a signal to this effect through another vessel, port, or other shore authority, either by VHF or use of an emergency transmitter.

Search and Rescue

The Maritime Rescue Coordination Center (MRCC) Chile, located in Valparaiso, is subdivided into five Maritime Rescue Coordination Subcenters (MRSC). The area of responsibility also includes the Drake Passage and an area which extends to Antarctica, which generally experiences adverse weather conditions.

A network of coast radio stations, monitored by MRCC Chile, maintains a continuous listening watch on international distress frequencies.

MRCC Chile and all MRSCs con be contacted by e-mail, as follows:

MRCC Chile	mrccchile@directemar.cl
	cbvradio@directemar.cl
MRSC Iquique	mrsciquique@directemar.cl
MRSC Puerto Montt	mrscpuertomontt@directemar.cl
MRSC Punta Arenas	mrscpuntaarenas@directemar.cl
MRSC Talcahuano	mrsctalcahuano@directemar.cl
MRSC Valparaiso	mrscvalparaiso@directemar.cl

Signals

Chilean submarines exhibit an amber flashing light, visible all around, to denote their presence on the surface and to serve as a warning to other vessels to proceed with caution and keep clear.

Storm signals used in Chilean ports are given in the accompanying table.

Chile—Storm Signals

Day	Night	Meaning
Pennant 2 *	One green light	Weather variable
One black ball	One red light	Bad weather expected (Winds force 4-7 from N)
Two black balls, vertically disposed	Two red lights, vertically disposed	Storm expected
Flag M *	—	Small craft traffic suspended
Flag R *	—	All cargo operations suspended
* From the International Code of Signals		

Time Zone

The Time Zone description for mainland Chile and the Archipelago de Juan Fernandez is QUEBEC (+4). Daylight Savings Time (PAPA (+3)) is maintained from the Saturday before the second Sunday in October to the Saturday before the second Sunday in March.

The Time Zone description for Isla de Pasqua (Easter Island) is SIERRA (+6). Daylight Savings Time (ROMEO (+5)) is maintained from the Saturday before the second Sunday in October to the Saturday before the second Sunday in March.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in Peru are, as follows:

1. Approaches to Arica. (IMO adopted)
2. Approaches to Iquiqui. (IMO adopted)
3. Approaches to Antofagasta. (IMO adopted)
4. Approaches to Quintero Bay. (IMO adopted)
5. Appraoches to Valparaiso. (IMO adopted)
6. Approaches to Concepcion Bay. (IMO adopted)
7. Approaches to San Vicente Bay. (IMO adopted)
8. Approaches to Punta Arenas. (IMO adopted)

U.S. Embassy

The U.S. Embassy is situated at Avenida Andres Bello 2800, Las Condes, Santiago.

The mailing address is APO AA 34033.

U. S. Embassy Chile Home Page
http://santiago.usembassy.gov

CHINA

General

China, which includes Hong Kong, is located in Eastern Asia, bordering the East China Sea, Korea Bay, Yellow Sea, and South China Sea, between North Korea and Vietnam.

China is the third largest country in the world and comprises about one-fifth of Asia. It is a great basin cut off from the rest of Asia by deserts and mountain ranges, and except for the two great river plains of the Ch'ang Chiang (Yangtze River) and the Huang Ho (Yellow River), most of the country is mountainous.

There is a great diversity of climate, physical regions, peoples, and languages, but the population is mostly concentrated on the river plains where the flattest land is located.

Only 10 per cent of the land is arable, with the soil generally poor in character, requiring the practice of terraced agriculture.

With the exception of the coast, which is temperate, most of China has hot summers and cold winters.

Rainfall in the S part amounts to about 2,000mm per year and is about twice that of the N part.

The S coast of China is indented by the great estuary of the Chu Chiang (Canton River), and Hai-nan Tao lies offshore just E of Vietnam.

The intermediate coast contains numerous bays and smaller inlets which provide areas of anchorage for those with permission to approach and enter.

The terrain is mostly mountains. High plateaus and deserts are in the W. Plains, deltas, and hills are in the E.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Oil Rigs

There are several oil drilling rigs and production platforms in Bo Hai (38˚30'N., 119˚30'E.). Mariners should be alert to the possibility of encountering rigs, the existence of which may not have been promulgated by Notice to Mariners or Navigational Warnings.

Floating or fixed drill rigs may be encountered off the S coast of China. Buoys associated with the drilling operations are frequently moored in the vicinity of these structures. The positions of these rigs and buoys are frequently changed and are generally promulgated by radio navigational warnings.

Fishing Vessels

Large fleets of fishing junks may be encountered on the coast of China; the junks may not be carrying lights, but have their smallest sail forward.

They are solidly built and serious damage could be incurred by colliding with them.

Large concentrations of fishing vessels under sail and powered may be encountered.

Mariners are cautioned that fishing vessels, in addition to being hampered, are liable at times to make unannounced maneuvers.

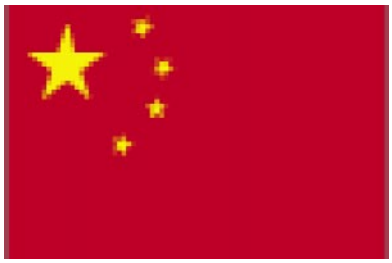
Every care should be taken to keep clear of vessels engaged in fishing.

Fishing stakes have been reported well offshore and mariners should consider this when proceeding from one Chinese port to another.

Currency

The official unit of currency is the yuan, consisting of 10 jiao.

Government



Flag of China

The People's Republic of China is a Communist state. The country is divided into 23 provinces, five autonomous regions, and four municipalities.

China is governed a President elected by the National People's Congress to a 5-year term. The Premier is nominated by the President and confirmed by the National People's Congress. The unicameral National People's Congress consists of 2,985 members elected by municipal, regional, and provincial people's congresses to serve 5-year terms.

The legal system is based on a complex mixture of custom and criminal statutes.

The capital is Beijing.

Holidays

The following holidays are observed:

January 1-2	New Year's Day
Chinese New Year	Variable (3 days)
May 1-3	Labor Day
October 1-3	National Day

Industries

The main industries are iron and steel, coal, machine building, armaments, textiles and apparel, petroleum, and chemical fertilizers.

Languages

The Chinese language has many dialects, but the common speech or Putonghua (often referred to as "Mandarin") is based on the Beijing Dialect. There are several dialects in use throughout China, but the government is promoting the general use of the national language.

Mined Areas

Several areas are declared dangerous due to mines laid during World War II and the Korean War. Due to the elapse of time, the risk in these areas to surface navigation is now considered no more dangerous than the ordinary risk of navigation. However, a very real risk still exists with regard to anchoring, fishing, or any form of submarine or sea bed activity.

Hainan Tao.—The area N of 18˚11'N, and between the meridians of 109˚29'E and 109˚35'E, is dangerous due to ground mines. A swept channel into Yu-lin Chiang Harbor has been cleared of ground mines, as follows:

1. A rectangle with its NE corner bearing 194˚, 914m from Lotao Jiao (18˚12'36"N., 109˚33'06"E.) with E and N sides running 180˚, 5,669m and 270˚, 2,743m from this position.
2. A 732m wide channel bearing 149.75˚ from the center of the harbor entrance connects with the rectangle.

Qiongxhou Haixia (W approach).—The area bound by the parallels of 20˚00'N and 20˚10'N, and the meridians of 109˚14'E and 109˚22'E, is dangerous due to mines.

Qiongxhou Haixia (E approach).—The area bound by the parallels of 20˚00'N and 20˚30'N, and the meridians of 110˚30'E and 111˚00'E, is dangerous due to mines. Middle Channel, about 1 mile wide, has been swept with its centerline passing through the following positions:

a. 20˚15'30"N, 111˚05'00"E.
b. 20˚15'30"N, 110˚55'18"E.
c. 20˚14'18"N, 110˚49'12"E.
d. 20˚14'30"N, 110˚44'24"E.
e. 20˚14'30"N, 110˚30'00"E.

Shantou Gang.—An area are known to be dangerous to navigation and a cleared channel through it are, as follows:

1. The area bounded by the parallels of 23˚18'N and 23˚21'N, and by the meridians of 116˚45'E and 116˚47'E, is dangerous.
2. A channel has been swept with the centerline passing through the following positions:
   a. Bearing 357˚, 2.25 miles from Biao Jiao Light (Hao-wang Chiao Light) (Good Hope Cape Light) (23˚14'18"N., 116˚48'12"E.).
   b. Bearing 139˚, 1.1 miles from flagstaff. on Lu Yu (Te Chou).

c. Bearing 305˚, 1.6 miles from flagstaff. on Lu Yu (Te Chou).

The channel is 0.4 mile wide except where it is limited by the navigable width of Luyu Shuidao (Te Chou Channel). The area W of position (c) is safe.

Xiamen Gang Approaches.—An area are known to be dangerous to navigation and a swept area and cleared channel through it are, as follows:

1. The area bounded by the parallels of 24˚16'N and 24˚25'N, and by the meridians of 118˚06'E and 118˚15'E, is dangerous.
2. The area bounded by the parallels of 24˚15'42"N and 24˚19'36"N, and by the meridians of 118˚09'00"E and 118˚13'18"E, has been swept.
3. A channel has been swept 0.5 mile wide, with the centerline passing through the following positions:
   a. 24˚19'48"N, 118˚10'24"E.
   b. 24˚25'00"N, 118˚05'24"E.

Vessels are recommended to approach the channel through the swept area described in paragraph (2) and with Ta-tan Tao Light bearing 000˚.

Wenzhou Wan.—The area bounded by the parallels of 27˚55'N and 28˚05'N, between the meridians of 121˚35'E and 121˚55'E, is dangerous.

T'ai-chou Wan.—The area bounded by the parallels of 28˚25'N and 28˚30'N, between the meridians of 121˚57'E and 122˚03'E, is dangerous.

Hwang Hai.—Area enclosed by a circle, with a radius of 2 miles centered on position 33˚51'N, 123˚10'E, is dangerous.

Ma Kung Approaches.—The area bounded by lines joining the following positions is open to unrestricted surface navigation, but vessels are cautioned not to anchor nor submarines to operate submerged:

a. 23˚31'54"N, 119˚31'12"E.
b. 23˚32'48"N, 119˚29'42"E.
c. 23˚33'42"N, 119˚30'24"E.
d. 23˚33'06"N, 119˚32'30"E.

Navigational Information

Enroute Volumes

Pub. 157, Sailing Directions (Enroute) Coasts of Korea and China.

Pub. 161, Sailing Directions (Enroute) South China Sea and Gulf of Thailand.

Maritime Claims

The maritime territorial claims of China are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone **	24 miles.
Fisheries or Economic Zone ***	200 miles.
Continental Shelf	200 miles or the Continental Shelf.

* Claims straight baselines. Requires advance permission or notification for innocent passage of warships in the territorial sea.

** Also considered a Security Zone.

*** Claims right to create a Safety Zone around any structure in the Economic Zone, the right to require authorization to lay submarine cables and pipelines, and the right to broad powers to enforce laws in the Economic Zone.

Maritime Boundary Disputes

Involved in a complex dispute with Vietnam, the Philippines, Taiwan, Malaysia, and possibly Brunei over the Spratly Islands (8˚38'N., 111˚55'E.). The 2002-issued *Declaration on the Conduct of Parties in the South China Sea* has eased tensions but falls short of a legally-binding code of conduct desired by several of the disputants.

Occupies the Paracel Islands (16˚40'N., 112˚20'E.), which are also claimed by Vietnam and Taiwan.

A maritime boundary and joint fishing zone agreement with Vietnam remains unratified.

Claims the Japanese-administered Senkaku Islands (Diaoyu Tai) (25˚50'N., 124˚05'E.).

Dispute with Russia over alluvial islands at the confluence of the Amur River and the Ussuri River, as well as a small island on the Argun River.

Pilotage

Pilotage is compulsory in Zhu Jiang and in all Chinese ports which are open to foreign shipping.

The vessel or the vessel's agent shall supply the following information to the port's pilotage authority:

1. Shipping company name.
2. Vessel name (in English and Chinese).
3. Nationality.
4. Call sign.
5. Vessel type.
6. Width, loa, and draft.
7. Maximum height above waterline.
8. Gross tons, net tons, and deadweight tons.
9. Main engine and thruster type.
10. Power and speed.
11. Cargo type and quantity.
12. ETA
13. ETD
14. Time of berth shifting.

Certain regulations, with respect to seaport pilotage issued by the Ministry of Communications of the People's Republic of China, have been made with a view of safeguarding the sovereignty of the People's Republic of China and ensuring the safety of ports and vessels:

Article 1.—For all foreign vessels which enter, leave, navigate, or shift berths within any port of the People's Republic of China, pilotage is compulsory.

No foreign vessel shall enter, leave, navigate, or shift berths within a port without having on board a pilot designated by the Harbor Superintendency Administration.

In cases of emergency, such as a sudden change of weather, a vessel at anchor may, however, for the purpose of ensuring safety, shift from her original anchor position to any other position in its vicinity without a pilot, provided the Harbor Superintendency Administration is notified of the same.

Article 2.—Incoming foreign vessels shall anchor in the designated anchorage or pilot station and await the pilot. In case an outgoing foreign vessel requests the pilot to conduct the vessel beyond the limits of the pilotage water, the pilot has the right to refuse such request.

Article 3.—Prior to arrival at the pilot anchorage, incoming vessels shall communicate with the pilot station (boat) or the port signal station by exhibiting appropriate signals prescribed by the Chinese Port Authorities and follow the instructions given by the pilot station (boat) or the port signal station.

Article 4.—When the pilot is boarding or leaving, it is the duty of the master of the vessel piloted to take safety measures and furnish a pilot-ladder complying with the requirements of the International Convention for the Safety of Life at Sea for embarking and disembarking the pilot safely and quickly, with due regard being paid to the safety of the pilot boat.

Article 5.—The master of the vessel piloted shall give the pilot a correct description of the vessel's navigability and steering qualities, and shall meet the pilot's demands in piloting. Failing to do so, the master shall be responsible for the consequences arising therefrom.

Article 6.—While the vessel is under pilotage, the master thereof shall in no way be relieved of his responsibility for management and operation of the vessel.

The master shall still give care to the safe navigation of the vessel and must cooperate closely with the pilot.

In the interests of safe navigation, the master may put forward reasonable recommendations and requirements, but shall not interfere in the pilot's work unreasonably. If the master has to leave the bridge temporarily, he shall inform the pilot of the same and designate an officer as his representative during his absence.

Article 7.—In order to ensure the vessel's safety, the pilot has the right to suspend pilotage when necessary until the circumstances are suitable for safe navigation again.

Article 8.—For marine accidents occasioned by the fault of a pilot in the course of piloting, the pilot shall be duly punished, but shall hold no liability for loss or damage resulting therefrom.

Article 9.—When sea conditions or other special circumstances make it impossible for the pilot to board an incoming vessel at the designated place, the vessel shall first be guided by the pilot boat to a place at which the pilot can safely embark, and then, be conducted by the pilot into the port after his boarding.

In case of an outgoing vessel, if the pilot finds it difficult to disembark at the designated place for the same reasons as are stated above, he may disembark midway at a safe place and then guide the vessel out of the port with the pilot boat.

Article 10.—The pilot may be accompanied by apprentice pilots who go on board for practice. The master of the vessel piloted shall provide them with conveniences in regard to both work and life.

Article 11.—The master of the vessel piloted shall sign the Pilotage Bill and pay the pilotage or shifting charges according to the prescribed tariff and if the pilot considers that the vessel should be assisted by a tug or tugs, the charges for the tugs actually employed shall also be for the account of the vessel.

Article 12.—These Regulations shall come into force on the date of publication. The *Regulations Relating to Sea-Port Pilotage*, promulgated by the Ministry of Communications of the People's Republic of China on 9th December 1959, shall at the same time be abrogated.

Regulations

The following are excerpts from regulations published by the People's Republic of China (PRC) and must be observed by all foreign vessels navigating Chinese port areas and coastal waters:

Article 1.—The Regulations were drafted to safeguard the sovereignty of the People's Republic of China, to maintain order in port areas and coastal waters, to ensure safety in navigation, and to prevent pollution in the ports and coastal waters of the People's Republic.

Article 2.—Foreign vessels (hereafter to be called "vessels") sailing in the ports and coastal waters of the People's Republic of China shall abide by the Regulations and all relevant laws, rules, and provisions. The vessels shall accept inspection if the port superintendent considers such an inspection necessary.

Article 3.—A week prior to arrival at destined port, the captain or owner of a vessel shall submit through its agent a filled-out, relevant form to the port superintendent for approval, and 24 hours prior to arriving at destined port (or prior to sailing at the port of departure if the voyage takes less than 24 hours) the captain shall, through his agent in port, submit to the port superintendent a report on the vessel's time of arrival and her drafts before and after entering into port. In the event of a change in the time of arrival, this should immediately be reported to the port authorities.

Article 4.—When a vessel intends to enter or leave port or to sail within the harbor or to change berth, such navigation must be conducted by an authorized pilot of the port authorities.

Article 5.—Upon arrival at port, the inbound report and other relevant forms and documents shall be immediately submitted to the port authorities together with the vessel's certificate of inspection and other relevant papers, and shall be subject to inspection. On leaving port, the outbound report and other relevant documents shall be submitted, and vessel may leave port on the strength of an officially issued clearance permit upon completion of inspection.

Article 6—Arms and ammunition on board shall, upon arrival at port, be sealed and stored by the port superintendent.

Wireless transmitting sets, radiophone transmitters, rocket signals, flame signals, and flare guns may be used only in an emergency and a report shall be submitted to the port authorities afterwards.

Article 7.—Firing, swimming, fishing, discharge of firecrackers and fire works, and other behaviors endangering port safety are prohibited in the harbor.

Article 9.—Vessels sailing in the ports and coastal waters of the People's Republic of China shall not engage in activities detrimental to the safety and interest of the People's Republic,

and they shall abide by the regulations governing straits, waterways, and navigation lines.

Article 10.—Vessels inside the harbor shall not sail at a speed that endangers other vessels and port installations.

Article 13.—Vessels having to take shelter in a storm or requiring temporary berthing in a port of the People's Republic open to foreign vessels, shall submit for approval an application to the port superintendent. Contents of the application are to include: name of vessel, radio call, nationality, name of shipping company, port of departure, port of destination, position of vessel, sailing speed, draft, color of hull, color of funnel and insignia. Vessels shall take shelter at officially designated point and area.

Article 18.—Lighting on the vessel shall not affect navigational safety of other vessels, and the strong light beaming toward the navigational channel shall be shaded.

Article 20.—The vessel shall apply with the port superintendent for approval prior to carrying out the following:

(1) Dismantling for repair of the boiler, main engine, anchor windless, steering engine, and radio.

(2) Trial run engine test.

(3) Lowering raft to conduct life-saving exercise.

(4) Welding (dockyard repairing being excepted) or fire-hazardous activities.

Article 23.—Sailing or lying at anchor in a harbor and coastal waters of the People's Republic of China, the vessel shall in the daytime fly the flag of nationality to which she belongs, and shall display additionally the name and signal flags and other flags designated by the port authorities during the course of entering and leaving port and when changing berth.

Article 25.—Except for ensuring navigational safety while sailing in the harbor, the vessel shall not blow the whistle at will. On testing the whistle, this shall be reported to the port superintendent beforehand.

Article 26.—When using a very-high frequency radiotelephone in the harbor, the vessel shall observe the *Provisional Regulations Governing Use of Very-High Frequency Radiotelephone by Foreign Vessels* issued by the Ministry of Communications of the People's Republic of China.

Article 27.—Article 2.—While loading, unloading, or carrying dangerous goods, the vessel shall display a designated signal, comply with regulations relating to transportation and management of dangerous goods, adopt necessary safety-ensuring measures, and especially in the case of handling counter-functioning goods, it is imperative that they do not mix in loading. It is strictly forbidden to load explosives, igniters, and inflammable items in the same cargo compartment.

Article 28.—When the vessel carries explosives, deadly or poisonous articles, radioactive goods, compressed gas, liquid gas, oxidizer, self-igniting goods, water-flammable goods, flammable liquid and solid articles, corrosive acid and other highly caustic and dangerous goods, she shall, through her agents at port, submit to the port superintendent for approval three days beforehand an extensively detailed goods catalog giving names, nature, packing, quantity, and position of loading together with written description explaining the quality of the dangerous goods, and only on the strength of an approval by the port authorities shall the vessel enter port, start unloading or pass through. When an outbound vessel is loaded with the above-mentioned dangerous goods, the vessel shall, three days prior to loading, apply for permission, and loading may be carried out only on the strength of approval.

Article 29.—In applying for a certificate of safe loading of dangerous export goods, the vessel shall, three days prior to loading, submit to the port superintendent a written application for approval, listing name, quality, packing, quantity, position of loading (a loading chart shall be attached to application), port enroute, and port of destination. Loading shall be carried out at the designated berth.

Article 34.—The vessel shall take good care of the navigation equipment and auxiliary navigating marks, and it shall report without delay to the port superintendent any damaged auxiliary navigating marks, port structure or other installations, and it shall be responsible for recovering damaged parts or for defraying all expenses for the recovery.

Article 35.—Vessels are prohibited to discharge at will, oil and oil mixtures and other polluted matters and discards in the harbors and coastal waters of the People's Republic of China.

Article 36.—In case of discharge of ballast water, washing water, and bilge water, it is imperative that application be filed with the port superintendent for approval. If vessels came from epidemic-infected port, it shall be subject to a quarantine inspection by the concerned sanitary department. Discharge of filthy water and washing water from a vessel carrying dangerous goods and other polluted articles shall be reported to the sanitary department for inspection. Upon approval discharge may be done at the designated area.

Article 37.—Oil tankers, and fuel-powered vessels shall maintain a fuel logbook and make actual entries according to the various provisions and stipulations of the logbook.

Article 38.—In case of pollution in the harbor and along the coastal waters, the incident shall be recorded in the fuel logbook and sailing logbook, and the case should immediately be reported to the port superintendent, and effective measures must at the same time be taken to prevent proliferation. If the situation warrants chemical treatment, a report on the properties of the chemical agent should be submitted to the port superintendent for approval.

Article 46.—In case of marine accident, a brief report must be promptly made through cablegram or radiotelephone to the port superintendent. If an accident occurred outside the port's jurisdiction, concerned captains shall, within 48 hours of entering into first nearest port, submit an accident report to the port superintendent. If an accident occurred within the port's jurisdiction, concerned captains shall submit, within 24 hours, a report to the port superintendent.

Article 47.—In the event that the vessel has caused loss of life and damage to properties in port and coastal waters of the People's Republic of China, it must try to give timely rescue of life and salvage of property involved and report the accident to the port superintendent and accept investigation and appropriate action.

If the perpetrator attempts to escape and hide himself, he shall be severely dealt with.

Regulations are also in force, locally, in each port, and are mentioned in this text when possible.

Some of these regulations include adherence to a track laid down by the Chinese authorities for a considerable distance before arriving at the port or embarking a pilot.

Quarantine Regulations

1. Vessels entering a Chinese port shall be subject to quarantine regulations and shall anchor in the quarantine anchorage, which shall be determined by the port health and quarantine office.

2. The port health and quarantine office shall be notified of the following information as soon as possible:

a. name and nationality of the vessel, and date and time of expected arrival at the quarantine anchorage.

b. port of departure and last port of call.

c. number of crew and passengers on board.

3. If during a voyage, a quarantinable disease or suspected quarantinable disease is discovered, or if there occurs a death not caused by accidental injuries, the master of the vessel shall, 6 hours prior to arrival, inform the port health and quarantine office of the following information:

a. the information indicated in regulation 2.

b. name of disease, number of persons ill or dead.

c. whether or not a doctor is aboard.

4. The following international code flags are to be hoisted on the foremast during the daytime:

a. Flag Q.—My ship is healthy and I request free pratique.

b. Flags QQ.—My ship is suspect, that is to say I have had a case or cases of infectious disease more than 5 days ago.

c. Flags QL.—My ship is infected, that is to say, I have had a case or cases of infectious disease within the last 5 days.

5. The following lights should be displayed at night (lights are to be displayed in a vertical line 1.8m apart):

a. Red over white.—I do not have free pratique.

b. Red over red over red.—Vessel is free of contagious disease, please grant free pratique.

c. Red over red over white over red.—Vessel is infected or suspected to be; please carry out quarantine immediately.

6. Vessels subject to quarantine shall exhibit the above code flags and/or signal lights, and shall anchor in the quarantine anchoring awaiting clearance. The code flags and/or signal lights shall not be taken down until instructions to do so have been received from the port health and quarantine office.

7. No one except specifically authorized personnel shall board or leave a vessel which exhibits the quarantine code flags or light signals, nor shall any objects, goods, or cargo be brought aboard or discharged from the vessel, nor shall any other vessel pass close by or anchor near the vessel.

8. The master of a vessel in danger, may, if he deems it appropriate or necessary, suspend conditions of regulation 7.

9. If the pratique issued to a vessel is endorsed with a note of restrictions by the port health and quarantine office, such requirements must still be met after the quarantine code flags and/or signal lights have been lowered.

10. After the port health and quarantine officers have boarded an arriving vessel receiving port health clearance, the master of the vessel shall produce a maritime declaration of health for submission to the port health and quarantine office, and this declaration must be signed by the master and endorsed by the ship's doctor, if there is one.

11. A vessel in quarantine must produce, for inspection, any lists or documents which are deemed relevant by the port health and quarantine office. In addition, the vessel's master and/or doctor may be questioned as to the health situation during the voyage. Any written replies must be signed by the master and countersigned by the ship's doctor, if there is one.

12. After inspection, free pratique shall be issued to healthy vessels. If health measures have been or have to be imposed, an endorsement shall be made on the pratique. A notice to apply health measures will be served upon a vessel that is infected or suspected of being infected. In addition, the port administration will be notified. A free pratique will not be issued until all health measures have been taken as required.

13. Vessels are normally inspected between sunrise and sunset. Inspections may take place during the hours of darkness if it is deemed necessary by the port health and quarantine office, or at the request of the master of the vessel, provided that there is sufficient light on the vessel.

14. A foreign vessel compelled to put in at a port which does not have a port health and quarantine office shall contact by radio the nearest port health and quarantine office. Such vessels shall follow the conditions in regulation 7.

15. Except for the circumstances specified in regulation 16, a vessel subject to quarantine, which refuses to take the required health measures shall exhibit the appropriate quarantine code flag or signal lights and then proceed back to sea.

Such vessels, when still in quarantine, may be given permission to take on fuel, water, and supplies. Permission to unload baggage or goods, or for passengers to disembark may be granted subject to health measures required by these regulations.

16. If a vessel subject to quarantine is found to have a case, or cases, of yellow fever or other quarantinable diseases on board while the person or persons infected have not been isolated in time, the vessel shall not be permitted to leave until the appropriate health measures have been taken.

17. Before departure of a vessel subject to port health clearance, the port health and quarantine office shall be supplied with the following information:

a. name and nationality of ship.

b. date and time of departure schedule.

c. port of destination.

d. list of crew and list of passengers.

A vessel receiving port health clearance at the same port both on its arrival and departure need not submit a crew list if there is no change in crew.

18. The port health and quarantine office may, during port health clearance of a departing vessel, question the master and/or ship's doctor of the sanitary condition of the vessel.

The port health and quarantine office may also ask to examine documents which they deem relevant to quarantine.

19. After inspection of a departing vessel, the port health and quarantine office shall issue a departure pratique according to the result of the inspection, or as the case may be, after the necessary health measures have been carried out, except in the case where its crew have not been medically checked nor has the vessel been given health inspection.

The above regulations are excerpts from Port Health and Quarantine Regulations of the People's Republic of China, Sections 31 through 47.

Inspection Regulations

1. For the purpose of strengthening the work of joint inspection of incoming and outgoing shipping, ship's crews, passengers, baggage, and cargo; so as to insure navigational safety, safeguard frontier security, prohibit smuggling, and keep contagious diseases from spreading into or out of the country, and to facilitate movement of shipping in and out of port and transportation in foreign trade, the present regulations are enacted.

2. The organs participating in the joint inspection work, and their respective areas of responsibility resulting from a division of work, are as follows:

a. Port Affairs Administration—Responsible for inspecting ships' papers and matters concerning safety.

b. Customs—Responsible for inspecting ships, cargo, and the personal baggage and goods carried by crews and passengers for contraband and violations of regulations.

c. Frontier Defense Inspection Organ—Responsible for subjecting ship's papers, passports and travel documents of crewmen and passengers, baggage, and cargo to a frontier defense inspection.

d. National Boundary Public Health and Quarantine Organ—Responsible for subjecting ships, crews, passengers, baggage, and cargo to a medical and health inspection, and making the necessary hygienic dispositions.

Unless specially sanctioned by the State Council, other organs may not conduct inspection.

3. Authorization for ships to enter or leave port is to be issued in a unified manner by the Port Affairs Administration, and other organs may not hold it up under some pretext. If an extraordinary event necessitates prohibiting or delaying the departure of a ship, this should be implemented through the Port Affairs Administration.

4. The Port Affairs Administration is responsible for organizing a joint inspection and notifying the inspection organs concerned beforehand of the time of entry or exit of a ship and its place of mooring.

5. In regard to the joint inspection of a ship subject to quarantine in accordance with regulation, aside from the pilot and personnel authorized by the National Boundary Public Health and Quarantine Organ, other participants in the joint inspection shall board the ship to carry out inspection after the quarantine inspectors have completed their work.

6. Inspection of the baggage and articles of diplomats and consuls of foreign countries, and other people deserving of preferential treatment, is to be done in accordance with pertinent regulations of the People's Republic of China.

7. Barring other regulations of the state, ships of Chinese registry navigating inland or along the coast are not subject to inspection as a matter of principle. In case of necessity, inspection may be conducted by the various inspection organs concerned through the Port Affairs Administration.

8. Inspection of ships' crews, passengers, baggage, and cargo is to be conducted only at the port of sailing, port of destination, and midway ports of call. If there are no special circumstances, ships may not be stopped for inspection in the middle of the way.

9. In each of the different ports, the Port Affairs Administration is responsible for conveying and conducting a conference on joint inspection at regular intervals, and the Customs, Frontier Defense Inspection Organ, and National Boundary Public Health and Quarantine Organ are to send delegates to the conference.

In case of necessity, other organs concerned may be requested to send delegates to take part in discussions on matters concerning joint inspection.

The conference on joint inspection is to appoint a secretary whose duty it will be to attend to day-to-day affairs under the direction of the Port Affairs Administration.

10. The word "inspection," as stated in the present Regulations, refers to the different items listed in Article 2.

Other items, like exercising control over shipping by the Port Affairs Administration, supervision of shipping and freight, and levying of duties by customs, and overseeing of sanitary conditions onboard ship by the National Boundary Public Health and Quarantine Organ, are governed by other regulations.

These shall be carried out by the respective organs in charge in accordance with the regulations concerned.

11. The present regulations shall come into force from the date of its promulgation.

ETA Messages

Vessels should send their ETA 7 days in advance, via their agent, to the relevant Harbor Superintendency Administration. Vessels departing from a port within a 24-hour sailing time should send their ETA upon departure. The ETA should be confirmed 24 hours prior to arrival and include the vessel's draft fore and aft. Any changes in the ETA should be sent immediately.

Dangerous Cargo Regulations

Vessels carrying dangerous cargo must submit their ETA, as well as the following information, to the appropriate Port Authority 96 hours prior to arrival, as follows:

1. Vessel name.
2. Vessel size.
3. Vessel type.
4. Stowage plan.

Vessels with a voyage time of less than 96 hours from their last port of call prior to arrival at a Chinese port must notify the appropriate Port Authority of their ETA and the above information prior to departing from the previous port.

Other Regulations

Foreign vessels should establish contact through a coast radio station near its port of destination.

Before calling at a Chinese port, vessels should apply via radio for pratique when departing the previous port.

The vessel's agent will send instructions for inbound vessels either through the coast radio station or INMARSAT.

When at anchor, vessels must maintain a continuous listening watch on the assigned VHF channel.

Special Regulations

Regulations exist for the passage of foreign vessels through Chiung-chou Hai-hsia (Hainan Strait). These regulations are set forth in detail in Pub. 161, Sailing Directions (Enroute) South China Sea and the Gulf of Thailand.

China Ship Reporting System (CHISREP)

The China Ship Reporting System (CHISREP) is operated by the Shainhai Maritime Safety Administration of the Mari-

time Safety Administration of the People's Republic of China. The objectives of the system are, as follows:

1. To reduce the time from the notification of the loss of a ship, even in the absence of a distress signal, to the initiation of search and rescue action.
2. To promote quick assistance by ships proceeding by ships in the vicinity.
3. To delimit the search and rescue area when the position of the vessel in distress in unknown or uncertain.
4. To offer emergency medical assistance or advice.

The area of coverage of CHISREP is N of latitude 9˚00'N and W of longitude 130˚00'E, excluding other countries territorial seas and inland water areas.

Although CHISREP is mandatory for most Chinese-flagged vessels, all foreign vessels entering Chinese waters are requested to report their position status to CHISREP SHANGAI for vessel safety monitoring. These reports are accepted free of charge by the following coast radio stations:

1. Shanghai Radio (XSG).
2. Guangzhou Radio (XSQ).

The CHISREP Center can also be contacted, as follows: by e-mail, as follows:

Mail:	190 Siping Road
	Shanghia Postcode 200086
Telephone:	+86-21-650781444
	+86-21-65073273
Facsimile:	+86-21-65089469
Telex:	85-337117 HSASC CN
E-mail:	chisrep@shmsa.gov.cn

Types of Reports.—There are seven different CHISREP reports; four are General Reports and three are Special Reports. The required information for each type of report is given in the accompanying table.

General Reports are, as follows:

1. **Sailing Plan (SP).—**This report should be sent, as follows:
   a. When departing a Chinese port—Within 2 hours before departure from a Chinese port.
   b. When entering the CHISREP area from overseas—From 24 hours prior until 2 hours after crossing the CHISREP area boundary.

The SP should contain enough information to initiate a plot and give an outline of the vessel's intended route. If the vessel fails to get underway within 2 hours after the time stated in the SP, a new SP should be sent.

2. **Position Report (PR).—**This report should be sent at the prescribed time. The first PR is required within 24 hours of the latest SP and every 24 hours afterward, unless a daily reporting time has been stipulated. The interval between PRs must not exceed 24 hours.

Should a vessel at any time be in a position more than 2 hours sailing time from the position predicted in its last intended route, a new PR or a DR should be sent. This information will be used by the CHISREP Center to update its plot of the vessel.

If a DR is sent less than 2 hours before the PR, the next PR may be sent 24 hours after the DR.

If the duration of a voyage is less than 24 hours, the ship is not required to send a PR; only an SP and an FR are required.

The ETA at a Chinese coastal port or the time of departure from the CHISREP area should be confirmed in the last PR. Any revised ETA may also be amended in any PR.

3. **Deviation Report (DR).—**This report should be sent, as follows:
   a. If the ship alters its intended route.
   b. If the vessel is at any time in a position more than 2 hours sailing time from the position predicted in its last SP or PR.

4. **Final Report (FR).—**This report should be sent, as follows:
   a. When the ship arrives at a Chinese coastal port.
   b. Within 2 hours before to 2 hours after departing the CHISREP area.

Special Reports are, as follows:

1. **Dangerous Goods Report (DG).—**This report should be sent when an incident takes place involving the potential loss overboard of hazardous packaged cargo.

2. **Harmful Substances Report (HS).—**This report should be sent when an incident takes place involving the discharge or probable discharge of oil (Annex I of MARPOL 73/78) or noxious liquid substances in bulk (Annex II of MARPOL 73/78).

3. **Marine Pollutants Report (MP).—**This report should be sent when an incident takes place involving the potential loss overboard of harmful substances in packaged form as identified by the International Maritime Hazardous Cargo Code as marine pollutants (Annex III of MARPOL 73/78).

CHISREP Message Formats

Identifier	Content	SP	PR	DR	FR	DG	HS	MP
A	Vessel's name and call sign	X	X	X	X	X	X	X
B	Time (UT (GMT)—(date and time of report 6 digits-day of month 2 digits; hour and minutes 4 digits)		X	X		X	X	X
C	Latitude and longitude (latitude is 4-digit group in degrees and minutes with N or S; longitude is 5-digit group in degrees and minutes E)		X	X		X	X	X
E	Course	I	X	X			X	

CHISREP Message Formats								
Iden-tifier	**Content**	**SP**	**PR**	**DR**	**FR**	**DG**	**HS**	**MP**
F	Speed	X	X	I			X	
G	Last port of call	X						
H	Date/Time (UTC)/Position of entry into the CHISREP area	X						
I	Next port of call and ETA	X		X				
K	Date/Time (UTC)/Position of departure from CHISREP area or name of the port when entering a port within the CHISREP area	I[1]		I	X			
L	Intended track	X		X			X	
M	Coast radio station monitored or other communication methods	X				X	X	X
N	Date/Time (UTC) of next Position Report	I	X	I			X	
O	Draft (in meters)	I[2]						
P	Pollution details, as described in the Key below					X[1]	X[2]	X[1]
Q	Defects, damages, deficiencies, and other limitations (brief details)					X[3]	X[3]	X[3]
R	Pollution, dangerous cargo lost overboard					X[4]	X[5]	X[4]
S	Weather (sea state (1-9), wind speed (in knots), wind direction {N/NE/E/SE/S/SW/W/NW}, and visibility {good/moderate/poor})	I	I	I		X	X	X
T	Vessel's agent (name and particulars)	I				X[6]	X[6]	X[6]
U	Vessel's grt and type	I				X	X	X
V	Medical personnel (doctor, physician's assistant, nurse, or NIL)	I						
W	Persons (state number of persons on board)	I						
X	Remark (any other useful information)	I	I	I			X	X
Z	End of report	X	X	X	X	X	X	X

Key	
X	Required information.
I	If necessary.
I[1]	Required for the following circumstances: 1. Vessels departing Chinese ports for foreign ports. 2. Vessels transiting the CHISREP area (crossing the CHISREP area during a voyage from one foreign port to another foreign port).
I[1]	Optional for the following circumstances: 1. Vessels entering the CHISREP area from overseas and berthing at Chinese ports. 2. Vessels transiting between two Chinese ports.
I[2]	Not required for vessels entering the CHISREP area from overseas and berthing at Chinese ports.

Key	
X[1]	**DG—**This information is required if the condition of the vessel is such that there is danger additional losses of packaged dangerous cargo into the sea. **MP—**This information is required in the event of probable discharge. The following details should be included: 1 Correct technical name(s) of cargo. 2 UN number(s). 3 IMO hazard class(es). 4 Name(s) of manufacturer(s), when known, or consignee(s) or consignor(s). 5 Types of packages, including identification marks. Specify whether portable tanks or tank vehicles, whether vehicle or freight container, or other transport unit containing packages. Include official registration marks and numbers assigned to the unit. 6 An estimate of the quantity and likely condition of the cargo. Information not immediately available should be sent in a supplementary message or messages.
X[2]	The following details should be included: 1 Type of oil or the correct technical name(s) of the noxious liquid substance on board. 2 UN number(s). 3 Pollution category (A, B, C, or D) for noxious liquid substances. 4 Name(s) of manufacturer(s) of substances, if appropriate, when known, or consignee(s) or consignor(s). 5 Quantity.
X[3]	The following details should be included: 1 Condition of the vessel. 2 Ability to transfer cargo/ballast/fuel.
X[4]	The following details should be included: 1 Correct technical name(s) of cargo. 2 UN number(s). 3 IMO hazard class(es). 4 Name(s) of manufacturer(s), when known, or consignee(s) or consignor(s). 5 Types of packages, including identification marks. Specify whether portable tanks or tank vehicles, whether vehicle or freight container, or other transport unit containing packages. Include official registration marks and numbers assigned to the unit. 6 An estimate of the quantity and likely condition of the cargo. 7 Whether loss is continuing. 8 Whether lost cargo floated or sank. 9 Cause of loss.
X[5]	The following details should be included: 1 Type of oil or the correct technical name(s) of the noxious liquid discharges into the sea. 2 UN number(s). 3 Pollution category (A, B, C, or D) for noxious liquid substances. 4 Name(s) of manufacturer(s) of substances, if appropriate, when known, or consignee(s) or consignor(s). 5 An estimate of the quantity of the substances. 6 Whether lost substances floated or sank. 7 Whether loss is continuing. 8 Cause of loss. 9 Estimate of the movement of the discharge or lost substances, giving current position, if known. 10 Estimate of the surface area of the spill, if possible.
X[6]	Name, address, telex number, and telephone number of the vessel's owner and representative (charterer, manager, or operator of the vessel or their agent).

Overdue Reports.—When vessels do not send a report within 3 hours of the prescribed or appointed time, the CHISREP Center will take the following actions:

1. Check to see whether the CHISREP Center has received the report.

2. Directly contact the ship through the most effective means of communication.

3. Have the appropriate coast radio station attempt to contact the vessel.

Ships which are 6 hours overdue will be called in the coast radio station's general call list (format: ship's call sign/JJJ).

When ships are 12 hours overdue, the CHISREP Center will contact the owner, operator, and/or agent of the vessel or vessels that may have had contact with it to determine the status of the overdue vessel.

Ships which are 18 hours overdue will have an urgent call (format: ship's call sign/XXX) followed by PAN/PAN made by the coast radio station.

For vessels which are 24 hours overdue, the CHISREP Center will come up with a Search and Rescue plan to be forwarded to the appropriate Rescue Coordination Center for action.

Search and Rescue

The China Maritime Search and Rescue Center (SAR Center Beijing) coordinates search and rescue operations and can be reached by e-mail, as follows:

cnmrcc@msa.gov.cn

A network of coast radio stations maintains a continuous listening watch on international distress frequencies.

Signals

Harbor signals, storm signals, berthing signals, quarantine signals, and traffic signals used in China are given in the accompanying tables. Flags and pennants are from the International Code of Signals (ICS), unless otherwise noted.

China Sea Non-Local Storm Signals Code

The China Sea Non-Local Storm Signals Code is a system of visual day signals in use since 1950. Information on these signals can be found in the Appendix.

China—Harbor Signals

Day	Night	Meaning
Hotel flag	One white light over one red light	Pilot vessel on station
Romeo flag	—	Vessel requires fresh water
Delta flag over Pennant zero	—	Vessel requires linehandling boat or linehandlers for berthing/unberthing
Delta flag over India flag	One red light between two white lights, vertically disposed	Vessel requires transportation boat.
Lima flag over Pennant four	—	Vessel requires trash disposal boat or vehicle.
Lima flag over Pennant six	One white light over one red light over one green light, vertically disposed	Vessel requires wastewater boat or vehicle.
Romeo flag over Uniform flag over Pennant one	One white light over one green light over one red light, vertically disposed	Vessel carrying out maneuvering trials.
Charlie flag over Alpha flag over Pennant six	One green light over one white light over one red light, vertically disposed	Vessel on fire and requiring immediate assistance.
Charlie flag over Alpha flag over Pennant seven	One white light between two green lights, vertically disposed	Vessel taking on water and requiring immediate assistance.
Whiskey flag	One green light over two white lights, vertically disposed	Vessel requires urgent medical assistance.
Delta flag	Two green lights over one white light, vertically disposed	Vessel entering/exiting a dock. Passing vessels to remain clear.
Victor flag over Echo flag	One white light between two green lights, vertically disposed	Vessel fumigating.
Bravo flag over Pennant zero	One green light over two red lights, vertically disposed	Vessel venting after fumigating.
Romeo flag over Victor flag	One green light over one red light	Vessel in conducting above or underwater construction work.
One black ball over Pennant one	One red light over two white lights, vertically disposed	Large vessel or tow will be or is turning in Zone 1.
One black ball over Pennant two	Two red lights over one white light, vertically disposed	Large vessel or tow will be or is turning in Zone 2.
One black ball over Pennant three	One red light over one green light, over one white light, vertically disposed	Large vessel or tow will be or is turning in Zone 3.

China—Harbor Signals		
Day	**Night**	**Meaning**
One black ball over Pennant four	Two red lights over one green light, vertically disposed	Large vessel or tow will be or is turning in Zone 4.
One black ball over Pennant five	One red light over two green lights, vertically disposed	Large vessel or tow will be or is turning in Zone 5.
November flag	One blue light	Cable vessel is mooring/casting off mooring cables.

China—Storm Signals		
Day	**Night**	**Meaning**
Winds not associated with a typhoon		
One black cylinder	Two green lights, vertically disposed	Winds force 6-7 within 6 hours.
One black diamond	One red light over one green light	Winds over force 8 within 24 hours.
Winds associated with a typhoon		
One black T	Three white lights, vertically disposed	Tropical storm within 48 hours.
One black ball	One green light between two white lights, vertically disposed	Winds force 6-7 within 24 hours.
One black triangle, point up	One white light over two green lights, vertically disposed	Winds over force 8 from N to W within 24 hours.
One black triangle, point down	One green light over two white lights, vertically disposed	Winds over force 8 from S to W within 24 hours.
Two black triangles, points up, vertically disposed	Two green lights over one white light, vertically disposed	Winds over force 8 from N to E within 24 hours.
Two black triangles, points down, vertically disposed	Two white lights over one green light, vertically disposed	Winds over force 8 from S to E within 24 hours.
Two black triangles, points together, vertically disposed	Three green lights, vertically disposed	Storm force winds not exceeding force 12.
One black X	One green light between two red lights, vertically disposed	Typhoon.

China—Berth Signals		
Day	**Night**	**Meaning**
November flag	One green light	Vessels of 200 tons and over will be docked at this berth. The flag/light is normally placed at the middle of the berth.
Red triangular flag (non-ICS)	One red light	Vessels of 200 tons and over will be docked at this berth. The flag/light marks the end of the berth.

China—Quarantine Signals		
Day	**Night**	**Meaning**
Quebec flag	Three red lights, vertically disposed	Vessel free of disease. Quarantine certificate requested.

China—Quarantine Signals		
Day	**Night**	**Meaning**
Two Quebec flags, vertically disposed	Two red lights over one white light over one red light, vertically disposed	Disease or suspect disease. Request immediate quarantine inspection.

China—Traffic Signals		
Day	**Night**	**Meaning**
Black arrow, point up	One blue light	Large vessel or tow entering or moving upstream.
Black arrow, point down	One yellow light	Large vessel or tow entering or moving downstream.
Green square flag (non-ICS)	One green light	Sunken vessel or object.
One black circle over a horizontal black cylinder	One red light over one white light over one green light, vertically disposed	Temporary one-way traffic in the harbor. May be displayed on a harbor boat.
Foxtrot flag over Pennant zero	Four red lights, vertically disposed	Prohibited zone in the harbor. May be displayed on a harbor boat.

Time Zone

China covers several Time Zones, but Time Zone description HOTEL (-8) is kept for the whole country. Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in China are, as follows:

1. Qing Zhou Haixia. (Government of China)
2. Approaches to Shanghai. (Government of China)
3. Wusong Kao. (Government of China)
4. Off Chengsan Jiao. (IMO adopted)
5. Approaches to Dalian. (Government of China)

U.S. Embassy

The U.S. Embassy is situated in Xiu Shui Bei Jie 3, Beijing. The mailing addresses are, as follows:

1. China address—
   Xiu Shui Bei Jie 3
   100600 Beijing
2. U. S. address—
   PSC 461, Box 50
   FPO AP 96521-0002

U. S. Embassy China Home Page
http://beijing.usembassy.gov

Appendix

The China Sea Non-Local Storm Signal Code

The China Sea Non-Local Storm Signals Code is a system of visual day signals in use since 1950. The signals, consisting of a series of visual day shapes represent the numbers 0 through 9, are shown in Table I below:

Table I

Symbol	Represents number
Thin cylinder, vertically disposed	1
Thin cylinder, horizontally disposed	2
Capital letter T, base down	3
Capital letter T, base up	4
Cross	5
One triangle, point up	6
One triangle, point down	7
One diamond	8
Thick cylinder, horizontally disposed	9
Two diamonds, points together, vertically disposed	0

The symbols described in Table I are displayed from the yardarms and the masthead of a storm signal mast and have the following significance:

1. One symbol at the masthead indicated the time at which the center of the disturbance was in the position indicated, as shown in Table II.

Table II—Time of Observation

Code Figure	Time in GMT
1	0300
2	0600
3	0900
4	1200
5	1500
6	1800
7	2100
8	2400
9	Position deduced from supplementary data since last warning

2. Four symbols at one yardarm denotes the position of the center of the disturbance. The two upper signals indicate the latitude in degrees. The two lower signals indicate the longitude in degrees; if the longitude is in excess of 100˚, the first digit is omitted.

3. Three symbols at the yardarm indicate the speed, direction and intensity of the disturbance. The two upper symbols indicate the speed and direction of motion of the disturbance, as shown in Table III; the lowest symbol indicates the intensity of the disturbance combined with the degree of accuracy of the position of the disturbance as described in paragraph 2, as shown in Table IV. This means the latitude and longitude indicated as in paragraph 2 is actually the coordinates of the center of a circle in which the disturbance is known to be located and not the actual center of the disturbance.

Table III—Position and Intensity

Code Figure	Radius	Intensity
0	Position and intensity uncertain.	
1	120 miles	Tropical depression winds up to 33 knots.
2	60 miles	
3	30 miles	
4	20 miles	Tropical storm winds of 34 to 63 knots.
5	60 miles	
6	30 miles	
7	20 miles	Typhoon winds of 64 knots and over.
8	60 miles	
9	30 miles	

Table IV—Speed and Direction of Motion

Meaning	Code Figure for Speed of Advance of:				Code Figure for Direction of Motion:		
	10 knots	15 knots	20 knots	25 knots and over	Curving	Acceler-ating	Forming and Prob-able Move-ment
NNE	01	17	33	49	—	—	—
NE	02	18	34	50	65	73	81
ENE	03	19	35	51	—	—	—
E	04	20	36	52	66	74	82
ESE	05	21	37	53	—	—	—
SE	06	22	38	54	67	75	83
SSE	07	23	39	55	—	—	—
S	08	24	40	56	68	76	84
SSW	09	25	41	57	—	—	—
SW	10	26	42	58	69	77	85
WSW	11	27	43	59	—	—	—
W	12	28	44	60	70	78	86
WNW	13	29	45	61	—	—	—
NW	14	30	46	62	71	79	87
NNW	16	31	47	63	—	—	—
N	16	32	48	64	72	80	88

Other Code Figures	Meaning
89	Forming Movement unknown.
90	Filling.
91	Filled. No further warnings.
92	Passed inland. No further warnings.
93	Passed out to sea. No further warnings.
94-98	Code figures not used.
99	Movement and condition unknown.

Note.—If no reliable observations of wind force near the center of the storm are available, the intensity signalled will indicate the highest wind force believed to exist in the storm.

COLOMBIA

General

Colombia is located in the N part of South America, bordering the Caribbean Sea, between Panama and Venezuela and bordering the North Pacific Ocean between Ecuador and Panama.

The climate is tropical along the coast and E plains; the wettest months are March through May and October through November. It is cooler in the highlands and the Andes Mountains.

The terrain from the coast inland consists of flat coastal lowlands, a central highlands, the high Andes Mountains, and flat plains in the E.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Colombia peso, consisting of 100 centavos.

Government

Colombia is a constitutional republic in which the executive branch dominates the government structure. The country is divided into 32 departments and one capital district.

Flag of Colombia

Colombia is governed by a directly-elected President who serves a 4-year term; the President may not be elected to consecutive terms. The bicameral Congress is composed of a 102-member Senate and a 165-member House of Representatives. Members of both houses are elected via proportional representation to serve 4-year terms.

The legal system is based on Spanish law and a criminal code model after United States procedures.

The capital is Bogota.

Holidays

The following holidays are observed:

January 1	New Year's Day
January 6 *	Feast of the Epiphany
March 19 *	St. Joseph Day
Holy Thursday	Variable
Good Friday	Variable
Easter Sunday	Variable
May 1	Labor Day
Ascension Day	Variable
Corpus Christi	Variable
Feast of the Sacred Heart	Variable
June 29 *	St. Peter and St. Paul
July 20	Independence Day
August 7	Battle of Boyaca
August 15	Assumption Day
October 12	Dia de la Raza
November 1 *	All Saints' Day
November 11 *	Cartagena Independence Day
December 8 *	Immaculate Conception
December 25	Christmas Day

* If the holiday does not fall on a Monday, it is celebrated on the following Monday.

Industries

The main industries are based on textiles, food processing, oil, clothing, footwear, beverages, chemicals, metals, cement, gold mining, coal, emeralds, iron, nickel, silver, and salt.

Languages

Spanish is the official language.

Navigational Information

Enroute Volumes

Pub. 125, Sailing Directions (Enroute) West Coast of South America.

Pub. 148, Sailing Directions (Enroute) Caribbean Sea Volume 2.

Maritime Claims

The maritime territorial claims of Colombia are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	Depth of 200m or the Limit of Exploitation.

* Claims straight baselines.

Maritime Boundary Disputes

Territorial dispute with Nicaragua and Honduras over Isla de San Andres (12˚33'N., 81˚43'W.), Isla Providencia (13˚21'N., 81˚22'W.), and the Quito Sueno Bank (14˚15'N., 81˚15'W.) region.

Maritime boundary dispute in the Gulf of Venezuela with Venezuela.

Pilotage

Pilotage is compulsory at all ports for vessels exceeding 250 nrt.

The vessel's ETA should be sent 48 hours and 12 hours in advance through the agent. Any delay in the ETA should be sent at least 6 hours in advance.

Pollution

Vessels may not clean tanks within 60 miles of the coast of Colombia. A vessel arriving at a port with dirty ballast will be ordered to proceed to sea beyond the 60-mile limit and take on clean ballast.

Prohibited Areas

Area to be Avoided

Isla Malpelo (4˚00'N., 81˚31'W.), about 270 miles W of the coast, has been declared a Particularly Sensitive Sea Area. All vessels greater that 500 grt, as well as all fishing vessels, should avoid the area bound by lines joining the following positions:

a. 4˚04.8'N, 81˚43.5'W.
b. 4˚04.8'N, 81˚28.2'W.
c. 3˚52.2'N, 81˚28.2'W.
d. 3˚52.2'N, 81˚43.5'W.

Regulations

General

Masters of vessels, within the territorial waters of Colombia, are liable to heavy fines, seizure of vessel, or cancellation of licenses for the following offenses:

1. Failure to obey the orders of competent authorities regarding arrival and departure of Colombian ports.
2. Mooring at piers, river banks, or off beaches where this is prohibited by the authorities.
3. Altering their port of destination without permission.
4. Unjustifiable delay on passage between two ports.
5. Embarking or disembarking unauthorized cargo or passengers.
6. Failure to comply with instructions from military, naval, police, customs, or port authorities.
7. Failure to comply with the regulations of the competent authorities in force for maritime and river traffic.

Berthing

Berthing priority in Colombian ports is, as follows:

1. Warships.
2. Passenger and mail vessels running on a fixed schedule.
3. Vessels carrying livestock and perishable cargo.
4. Passenger vessels not on a fixed schedule.
5. Vessels loading cargo for export.
6. Vessels discharging cargo for export.
7. Tankers.
8. Coastal vessels.
9. Vessels carrying explosives.

Search and Rescue

Colombian Coast Guard stations maintain continuous listening watches for distress traffic, as follows:

1. Atlantic coast—VHF channels 11 and 16.
2. Pacific coast—VHF channels 16 and 68.

Time Zone

The Time Zone description is ROMEO (+5). Daylight Savings Time is not observed.

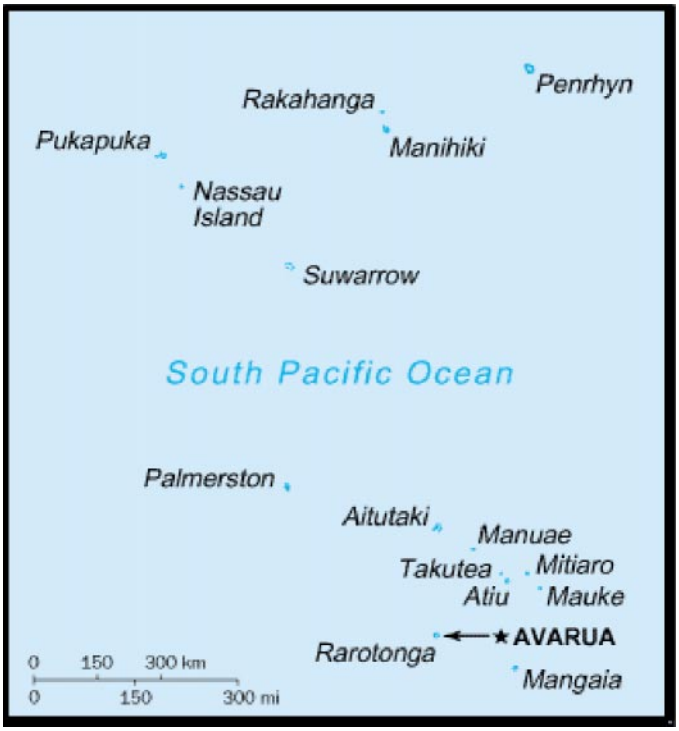
U.S. Embassy

The U.S. Embassy is situated at Calle 22D-BIS, No. 47-51, Bogota.

The mailing address is Carrera 45, #22D-45, Bogota, D.C.

U. S. Embassy Colombia Home Page
http://bogota.usembassy.gov

COOK ISLANDS



General

The Cook Islands consists of 15 islands located in the South Pacific Ocean between 8˚S and 23˚S, and 156W˚ and 167˚W. They are divided into the Northern Cook Islands and the Southern Cook Islands (Lower Cook Islands).

The Northern Cook Islands consist of Suwarrow Atoll, Penrhyn Atoll, Manihiki Atoll, Rakahanga Atoll, Nassau Island, and Pukapuka Islands. The islands are low coral atolls generally enclosing a lagoon.

The Southern Cook Islands (Lower Cook Islands) consist of Palmerston Atoll, Mangaia, Rarotonga, Mauke, Mitiaro, Atiu, Takutea, Manuae, and Aitutaki. Manuae and Takutea are low coral atolls enclosing a lagoon. The remaining islands are volcanic and more elevated.

Rarotonga, the largest of the Cook Islands, has an area of 25 square miles. The rugged volcanic interior of the island rises to a height of 652m.

The climate is tropical and moderated by trade winds. Rainfall is moderate to heavy throughout the year, with the heaviest rainfall occurring from November through March. weather is variable from day to day; an otherwise sunny day can end in rainfall.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the New Zealand dollar, consisting of 100 cents.

Government

Flag of the Cook Islands

The Cook Islands is a self-governing parliamentary government in free association with New Zealand. The Cook Islands are fully responsible for their internal affairs. New Zealand retains responsibility for external affairs in consultation with the Cook Islands.

The Cook Islands are governed by a Prime Minister who is usually the leader of the majority party or majority coalition after legislative elections are held. The unicameral Parliament consists of 25 directly-elected members serving 5-year terms. The 15-member House of Ariki is an advisory council composed of hereditary chiefs; it advises on traditional matters and maintains considerable influence, but has no legislative authority.

The legal system is based on New Zealand law and English common law.

The capital is Avarua on Rarotonga.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Monday	Variable
April 25	ANZAC Day
Ascension Day	Variable
July 25	Gospel Day (Rarotonga only)
August 4	Constitution Day
October 25	Gospel Day
December 25	Christmas Day
December 26	Boxing Day
December 31	New Year's Eve

Industries

The main industries are based on fruit processing and tourism. The N atolls produce coconuts and fish. The S atolls produce on bananas, citrus, and pineapples.

Languages

English is the official language. Most islanders are bilingual, using the Cook Islands Maori dialect.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of the Cook Islands are, as follows:

Territorial Sea	12 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

Regulations

Ports of Entry

Vessels are required to call at one of the following ports in the Cook Islands prior to calling at any other island unless they are in distress or have received specific approval from the government of the Cook Islands:

1. Avatiu on Rarotonga.
2. Aratunga on Aitukaki.
3. Penrhyn Atoll.
4. Palmerston Atoll (pleasure craft only).
5. Suwarrow Atoll (pleasure craft only).

Rhinoceros Beetle Regulations

Every vessel arriving in the Cook Islands from an area infested with rhinoceros beetles, which feeds on and destroys the heart of new growth shoots of the coconut palm, is required to keep at least off the shore or encircling reef of an island from at least 15 minutes before sunset until at least 15 minutes after sunrise.

The areas regarded as infested are, as follows:

1. Fiji.
2. Indonesia.
3. New Britain.
4. New Ireland.
5. Palau.
6. Philippines.
7. Samoa.
8. Tokelau Islands.
9. Tonga.
10. Wallis and Futuna.

Before these regulations can be eased, the following quarantine periods must be observed:

1. Cargo vessels which have been operating in an infested area—3 months.
2. Naval vessels and yachts which have been in an infested port—3 weeks.

Search and Rescue

The Cook Islands Police are responsible for coordinating search and rescue operations. Rarotonga Coast Radio Station (ZKR) maintains a continuous listening watch on 2182 kHz and VHF channel 16.

Time Zone

The Time Zone description is WHISKEY (+10). Daylight Savings Time is not observed.

U.S. Embassy

There are no U.S. diplomatic offices in the Cook Islands.

COSTA RICA

General

Costa Rica is located in Central America, bordering the Caribbean Sea and the North Pacific Ocean, between Panama and Nicaragua.

The climate is tropical, having its dry season from December to April, and its rainy season from May to November.

The terrain is primarily coastal plains separated by rugged mountains.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Costa Rica colon, consisting of 100 centimos.

Government

Flag of Costa Rica

Costa Rica is a democratic republic. The country is divided into seven provinces.

Costa Rica is governed by a directly-elected President who serves for a 4-year term. The unicameral Legislative Assembly is composed of 57 directly-elected members serving 4-year terms.

The legal system is based on Spanish civil law.

The capital is San Jose.

Holidays

The following holidays are observed:

January 1	New Year's Day
Mid April	Juan Santamaria (Anniversary of the Battle of Rivas)

Holy Thursday	Variable
Good Friday	Variable
Easter Sunday	Variable
May 1	Labor Day
June 29	St. Peter and St. Paul
Late July	Annexation of Guanacaste
August 15	Assumption Day/Mother's Day
September 15	Independence Day
October 12	Columbus Day/Dia de la Raza
December 8	Immaculate Conception
December 24	Christmas Eve
December 25	Christmas Day
December 28-31	Christmas Holiday

Industries

The main industries are food processing, textiles and clothing, construction materials, fertilizers, and plastic products.

Tourism and the export of bananas, coffee, and other agricultural products are also important to the economy.

Languages

Spanish is the official language. English is spoken in the area of Puerto Limon.

Navigational Information

Enroute Volumes

Pub. 148, Sailing Directions (Enroute) Caribbean Sea Volume 2.

Pub. 153, Sailing Directions (Enroute) West Coasts of Mexico and Central America.

Maritime Claims

The maritime territorial claims of Costa Rica are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles.

* Claims straight baselines.

Maritime Boundary Disputes

Legal dispute with Nicaragua over navigational rights on the San Juan River.

Regulations

No vessel is allowed to enter a Costa Rican port until visited by a Health Inspector, the Captain of the Port, and a Customs Officer.

Vessels should send their ETA at their first Coast Rican port as soon as possible after leaving its previous port and at least 72 hours in advance. Any changes of at least 1 hour in the ETA should be reported at least 24 hours in advance. The initial message should include the following information:

1. Vessel draft.
2. Cargo.
3. Cargo consignees.
4. Vessel requirements.

Search and Rescue

Puntarenas Coast Radio Station (TEC) maintains a continuous listening watch on VHF channel 16 for distress traffic.

Time Zone

The Time Zone description is SIERRA (+6). Daylight Savings Time is not observed.

U.S. Embassy

The embassy is situated on Calle 120, Avenida 0, Pavas, San Jose.

The mailing addresses are, as follows:

1. Costa Rica address—
   920-1200
   San Jose
2. U.S. address—
   U. S. Embassy San Jose
   APO AE 34020

U. S. Embassy Costa Rica Home Page
http://sanjose.usembassy.gov

EAST TIMOR

General

East Timor, on the E half of the island of Timor, is located NW of Australia, in the Lesser Sunda Islands, at the E end of the Indonesian archipelago.

The climate is tropical hot and humid, with a distinct dry season from June to October. The highest rainfall occurs in the S part of the country.

The terrain is mostly mountainous.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the U.S. dollar, consisting of 100 cents.

Government

Flag of East Timor

East Timor is a republic. The country is divided into 13 administrative districts.

East Timor is governed by a President who is appointed by the National Parliament to a 5-year term. The unicameral National Parliament is composed of 88 directly-elected members serving a 5-year term. Beginning with the next election (2006 or 2007), the National Parliament membership can range from a low of 52 members and a high of 62 members, still maintaining a term of 5 years.

The legal system is a U.N.-drafted system based on Indonesian law.

The capital is Dili.

Holidays

The following holidays are observed:

January 1	New Year's Day

Holy Thursday	Variable
Good Friday	Variable
May 1	Labor Day
May 20	Independence Day
May 1	Labor Day
June 10	Corpus Christi
August 15	Assumption Day
August 30	Constitution Day
September 30	Liberation Day
November 1	All Saints' Day
November 12	Santa Cruz Day
December 8	Immaculate Conception
December 25	Christmas Day

Industries

The main industries include agriculture, printing, soap manufacturing, cloth manufacturing, and handicrafts.

The main exports are coffee, sandalwood, and marble.

Languages

Portuguese and Tetum are the official languages. English and Bahasa Indonesia are also in common use.

Navigational Information

Enroute Volume

Pub. 163, Sailing Directions (Enroute) Borneo, Jawa, Sulawesi, and Nusa Tenggara.

Maritime Claims

The maritime territorial claims of East Timor are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

Maritime Boundary Disputes

In 1999, a partial maritime boundary between Australia and East Timor was established over part of the Timor Gap, but an unreconciled area where Australia was granted a 90 per cent share of exploited gas reserves has hampered the creation of a maritime boundary with Indonesia.

Indonesia and East Timor contest the sovreignty of the uninhabited coral island of Pulau Batek (Fatu Sinai) (9˚15'S., 123˚59'E.), which has hampered the creation of a maritime boundary.

Time Zone

The Time Zone description is INDIA (-9). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at Vila 10, Avenida de Portugal, Farol, Dili.

The mailing address is Department of State, 8250 Dili Place, Washington, DC 20521-8250.

ECUADOR

General

Ecuador is located in the W part of South America, bordering the Pacific Ocean at the Equator, between Colombia and Peru.

The climate is tropical along the coast and cooler inland. In coastal areas, the dry season is from May through December. In the mountains, the dry season is only from June through September. In the mountains, the temperature may be as much as 10˚C lower than along the coast.

The main feature of Ecuador is the great mass of the Andes Mountains. A narrow stretch of coastal plain lies between the sea and the Andes Mountains.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Area to be Avoided

On July 1, 2006 an IMO Area to be Avoided will be in force around the Archipelago de Colon (Galapagos Islands). All ships and barges carrying cargo of oil or potentially hazardous material and all ships of 500 gross tons and over in transit should avoid the area bounded by lines joining the following positions:

a. 2˚29'49.2"N, 92˚21'25.2"W.
b. 1˚25'55.8"N, 89˚03'32.4"W.
c. 0˚00'42.0"S, 88˚05'45.0"W.
d. 0˚11'54.0"S, 88˚00'57.0"W.
e. 0˚34'54.0"S, 87˚54'34.2"W.
f. 1˚02'12.6"S, 87˚52'57.0"W.
g. 2˚35'04.2"S, 88˚48'18.0"W.
h. 2˚46'12.0"S, 89˚29'41.4"W.
i. 2˚41'59.4"S, 90˚42'12.6"W.
j. 2˚05'12.0"S, 92˚17'40.8"W.
k. 1˚32'01.2"S, 92˚92'55.2"W.
l. 1˚48'40.2"N, 92˚51'30.6"W.

Currency

The official unit of currency is the U.S. dollar.

Government

Flag of Ecuador

Ecuador is a republic. The country is divided into 22 provinces.

Ecuador is governed by a directly-elected President who serves a 4-year term. The Cabinet is appointed by the President. The unicameral National Congress is composed of 125 directly-elected members serving 4-year terms; 105 members are elected from multi-seat constituencies, while the remaining 20 members are elected at large by proportional representation.

The legal system is based on a civil law system.
The capital is Quito.

Holidays

The following holidays are observed:

January 1	New Year's Day
Carnival	Variable
Holy Thursday	Variable
Good Friday	Variable
May 1	Labor Day
May 24	Battle of Pichincha
June 14	Corpus Christi
July 24	Simon Bolivar Day
July 25	Foundation Day (Guayaquil only)
August 10	Independence Day
October 9	Anniversary of Guayaquil
October 12	Dia de la Raza
November 2	All Souls' Day
November 3	Anniversary of Cuenca
December 6	Anniversary of Quito
December 25	Christmas Day
December 31	New Year's Eve

Industries

The main industries are based on petroleum, food processing, textiles, metal works, paper products, wood products, chemicals, plastics, fishing, and lumber.

Languages

Spanish is the official language. Quechua, the language of the Inca empire, is also spoken.

Navigational Information

Enroute Volume
Pub. 125, Sailing Directions (Enroute) West Coast of South America.

Maritime Claims
The maritime territorial claims of Ecuador are, as follows:

Territorial Sea *	200 miles.
Continental Shelf	Beyond 200 miles claimed along the undersea Carnegie Ridge, measured 100 miles from the 2,500m depth curve.

* Straight baselines have the effect of enclosing the waters between Archipelago de Colon (Galapagos Islands).
Claims the right to enforce environmentally-based navigation restrictions in the vicinity of Archipelago de Colon (Galapagos Islands).

Pilotage

Pilotage is compulsory for all vessels and is available 24 hours. Vessels should await the pilot off the sea buoy at all ports unless instructed to the contrary. The pilot must be requested by the agent at least 12 hours in advance.

Pollution

Tank cleaning may not be undertaken by the following vessels within the indicated distances off the coast of Ecuador:

1. Ocean-going vessels—50 miles.
2. Coastal vessels—15 miles.

Regulations

Notice of Arrival
All vessels bound for any port in Ecuador should send their ETA 72 hours prior to arrival at the pilot boarding position to the Port Authority of their destination. This message, which should be in Spanish, should be sent to the following:

1. Port Captain.
2. Health Officer.
3. Customs Administration.
4. Immigration Office.

The message should contain the following information:

1. Name of vessel.
2. Nationality of vessel.
3. Last port of call.
4. Destination.
5. Any sick crew on board?
6. Any explosives on board?
7. Number of passengers for the port.
8. Number of passengers in transit.
9. Weight of cargo, in tons, to be unloaded.
10. Weight of cargo, in tons, in transit.
11. Any mail to discharge?
12. ETA at the outer buoy, sea buoy, or pilot boarding position.
13. Agent's name.
14. Master's name.

Messages should also be sent to the agent and should include berthing requirements, maximum draft, etc.

Any changes to the ETA of over 1 hour should be reported at least 12 hours in advance.

Vessel Reporting System

A mandatory vessel reporting system applies to vessels navigating within 200 miles of Ecuador and between the mainland and Archipelago de Colon (Galapagos Islands).

Reports should be sent through Guayaquil (HCG) and addressed to COAST GUARD (COGUAR). Vessels should send reports, as follows:

1. An SP report immediately after sailing.
2. An FR report when entering Ecuadorian waters or at least 12 hours before ETA at the port.
3. A PR report as required.
4. A WP report 3 hours before entering and 3 hours before leaving Ecuadorian waters (for ships on passage).

Message reporting requirements and formats are given in the accompanying table.

Search and Rescue

The Ecuadorian Coast Guard Headquarters is responsible for coordinating search and rescue operations. Guayaquil Coast Radio Station (HCG) maintains a continuous listening watch for distress traffic on 500 kHz, 2182 kHz, and VHF channels 16 and 26.

Time Zone

The Time Zone description for mainland Ecuador is ROMEO (+5). Daylight Savings Time is not observed.

The Time Zone description for Archipelago de Colon (Galapagos Islands) is SIERRA (+6). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at Avenida 12 de Octubre and Avenida Patria, Quito.

The mailing address is APO AA 34039.

There is a Consulate General in Guayaquil.

U. S. Consulate Ecuador Home Page
http://usembassy.state.gov/quayaquil

Ecuador Vessel Reporting System—Message Formats and Message Requirements

Designator	Information	SP	FR	PR	WP
A	Message type: e.g. SP, FR, PR, or WP.	X	X	X	X
B	Vessel name, flag, and call sign.	X	X	X	X
C	Date and time of report (local time), in 6 digits.	X	X	X	X
D	Last port of call for FR and WP. Next port of call for SP.	X	X		X
E	Position (latitude in degrees and minutes N or S and longitude in degrees and minutes W).	X		X	X
F	True course in degrees (3 digits).	X	X	X	X
G	Speed in knots (to nearest knot—2 digits).	X	X	X	X
H	Next port of call for FR and WP. Last port of call for SP.	X	X		X
I	ETA at next port of call (local time), in 6 digits.	X	X		X

EL SALVADOR

General

El Salvador, located in Central America, is the smallest of the Central American countries. It is bounded on the W by Guatemala, to the N and E by Honduras, and shares the Golfo de Fonseca with Honduras and Nicaragua. It is the only Central American country which has no Caribbean coastline.

The principal port is La Union, an excellent harbor. Acajutla and La Liberted are open roadsteads.

The climate is tropical, with the rainy season from May to October and the dry season from November to April. Inland, the nights are cool.

The terrain is typically Central American, with a high mountainous plateau rising inland bordered by a narrow, hot, and humid coastal plain.

The two high mountain chains, which cross almost the entire country, have numerous spurs which extend very close to the coast.

Earthquakes are not infrequent. Volcan de Izalco, an active volcano, rises in the SW corner of the country.

None of the rivers which intersect the coastal plain are of any use to navigation.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the colon, consisting of 100 centavos.

Government

Flag of El Salvador

El Salvador is a republic. The country is divided into 14 departments.

El Salvador is governed by a directly-elected President serving a non-renewable 5-year term. A Council of Ministers is appointed by the President. The unicameral Legislative Assembly consists of 84 directly-elected members, through a system of proportional representation, serving 3-year terms.

The judicial system is based on civil and Roman law, with traces of common law.

San Salvador is the capital.

Holidays

The following holidays are observed:

January 1	New Year's Day
Holy Thursday	Variable
Good Friday	Variable
Holy Saturday	Variable
Easter Monday	Variable
May 1	Labor Day
August 3-6	San Salvador Festival
September 15	Independence Day
November 2	All Souls' Day
November 5	First Call for Independence
December 25	Christmas Day
December 31	New Year's Eve

Industries

The main industries are based on food processing, beverages, petroleum, nonmetallic products, tobacco, chemicals, textiles, and furniture.

The country is the worlds principal source of a medicinal gum from the balsam tree.

Coffee, the most important crop, furnishes about 80 per cent of the total exports of the country.

El Salvador is fairly well-industrialized compared to the other Central American states. However, El Salvador still relies to a great extent on its agricultural exports as a major source of revenue.

Languages

Spanish is the official language.

Navigational Information

Enroute Volume

Pub. 153, Sailing Directions (Enroute) West Coasts of Mexico and Central America.

Maritime Claims

The maritime territorial claims of El Salvador are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Ecnomic Zone	200 miles.
Continental Shelf	200 miles.

* Claims Golfo de Fonseca as a historic bay.

Maritime Boundary Disputes

Advised by the ICJ to adopt a triparite resolution with El Salvador and Nicaragua to establish a maritime boundary in the Golfo de Fonseca which considers Honduran access to the Pacific Ocean.

Claims Conejo Island, in Golfo de Fonseca.

Search and Rescue

The El Salvadorian Air Force is responsible for coordinating search and rescue operations.

Time Zone

The Time Zone description is SIERRA (+6). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is located at Final Boulevard Santa Elena, Antiguo Cuscatlan, La Libertad, San Salvador.

The mailing address is Unit 3116, APO AA 34023.

U. S. Embassy El Salvador Home Page
http://sansalvador.embassy.gov

FEDERATED STATES OF MICRONESIA

General

The Federated States of Micronesia, formerly known as the Trust Territory of the Pacific Islands, is composed of all the Caroline Islands except the Bell group They are located in the North Pacific Ocean in a vast chain between 1˚N and 10˚N, and 131˚E and 164˚E.

The four major island states are Kosrae, Pohmpei, Chuuk, and Yap. There are a total of 607 islands in the country.

The climate is tropical. There is heavy rainfall throughout the year, especially in the E islands, which are located on the S edge of the typhoon belt. Typhoons occasionally occur from June to December.

The terrain ranges from high mountainous islands to low coral atolls. There are volcanic outcroppings on Pohnpei, Kosrae, and Truk.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Local fishermen in small canoes may be encountered in the area bound by lines joining the following positions:

a. 8˚20'N, 147˚00'E.
b. 8˚20'N, 148˚00'E.
c. 7˚30'N, 148˚00'E.
d. 7˚00'N, 147˚00'E.
e. 7˚15'N, 146˚00'E.
f. 7˚40'N, 145˚35'E.

Caution should be exercised when transiting this area, especially at night and during times of low visibility.

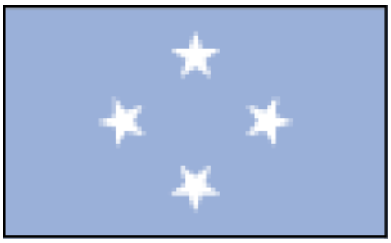
Currency

The official unit of currency is the U.S. dollar, consisting of 100 cents.

Government

The Federated States of Micronesia is a republic and has a constitutional government in free association with the United States. The country is divided into four states.

The Federated States of Micronesia is governed by a President who is elected to a 4-year term by the Congress. The unicameral Congress consists of 14 members. Four members, one from each state, are directly elected to serve 4-year terms; the President is chosen from one of these four members. The



Flag of the Federated States of Micronesia

remaining 10 members are directly elected to serve 2-year terms.

The legal system is based on Trust Territory law, common law, and customary law.

The capital is Palikir.

Holidays

The following holidays are observed:

January 1	New Year's Day
January 11	Kosrea Constitution Day
March 1	Yap Day
March 31	Pohnpei Culture Day
Good Friday	Variable
May 10	Proclamation of the Federated States of Micronesia
July 4	Independence Day
September 8	Kosrae Liberation Day
September 11	Pohnpei Liberation Day
October 24	United Nations Day
November 3	Independence Day
November 8	Pohnpei Constitution Day
Fourth Thursday in November	Thanksgiving Day
December 24	Yap Constitution Day
December 25	Christmas Day

Industries

The main industries are based on tourism, construction, fish processing, and craft from shell, wood, and pearls.

Languages

English is the official language. Trukese, Phonpeian, Yapese, and Kosrean are spoken.

Mined Areas

Within Chuuk or the Hogulu Islands, swept channels to the Moen Island anchorage have been established, as folows:

1. North Pass—A channel 0.5 mile wide, with its centerline joining the following points:
   a. 7˚28'36"N, 151˚48'35"E.
   b. 7˚29'18"N, 151˚48'56"E.
   c. 7˚31'35"N, 151˚51'13"E.
   d. 7˚32'22"N, 151˚51'18"E.
   e. 7˚37'26"N, 151˚49'10"E.
   f. 7˚39'38"N, 151˚47'54"E.
   g. 7˚40'55"N, 151˚46'56"E.

2. Northeast Pass—A channel 0.5 mile wide, with its with centerline joining the following points:
   a. 7˚30'00"N, 151˚49'54"E.
   b. 7˚30'26"N, 151˚53'57"E.
   c. 7˚30'16"N, 151˚55'33"E.
   d. 7˚30'01"N, 151˚56'53"E.
   e. 7˚29'55"N, 151˚57'54"E.

   then course 061.5˚ through Northeast Pass.

3. South Pass—A channel 0.5 mile wide, with its centerline joining the following points:
   a. 7˚13'28"N, 151˚47'52"E.
   b. 7˚17'38"N, 151˚51'36"E.
   c. 7˚19'14"N, 151˚51'36"E.
   d. 7˚19'23"N, 151˚52'34"E.
   e. 7˚19'23"N, 151˚54'59"E.
   f. 7˚22'24"N, 151˚56'44"E.
   g. 7˚23'54"N, 151˚54'39"E.
   h. 7˚23'37"N, 151˚49'40"E.

4. West Pass (Piaanu)—A channel to the anchorage SE of Fefan Island, 0.5 mile wide, with its centerline joining the following points:
   a. 7˚15'54"N, 151˚44'31"E.
   b. 7˚14'13"N, 151˚40'05"E.
   c. 7˚14'18"N, 151˚38'03"E.
   d. 7˚16'55"N, 151˚35'53"E.
   e. 7˚17'43"N, 151˚34'35"E.
   f. 7˚19'52"N, 151˚31'55"E.

   then a course 270˚ through Piaanu Pass.

5. Ships should veer anchor and cable if anchoring, and submarines should not bottom in the above channels, due to the danger of detonating inactive mines.

6. Moen Anchorage has been swept and is considered safe for navigation. The anchorage is enclosed by a line joining the following positions:
   a. 7˚22'41"N, 151˚45'25"E.
   b. 7˚22'41"N, 151˚50'26"E.
   c. 7˚23'57"N, 151˚50'26"E.
   d. 7˚24'31"N, 151˚48'42"E.
   e. 7˚25'19"N, 151˚48'44"E.
   f. 7˚25'35"N, 151˚49'08"E.
   g. 7˚28'33"N, 151˚49'51"E.
   h. 7˚28'33"N, 151˚45'22"E.

7. The area in the vicinity of Eten Island is safe for surface navigation only. Anchoring, dredging, pile-driving, trawling, and submarine bottoming should be avoided.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of the Federated States of Micronesia are, as follows:

Territorial Sea	12 miles.
Fisheries or Economic Zone	200 miles.

Search and Rescue

The National Police of the Federated States of Micronesia are responsible for the coordination of search and rescue operations. The Office of National Disaster is assisted by a designated SAR Coordinator and four regional Disaster Control Officers in Kosrae, Pohnpei, Chuuk, and Yap.

A continuous listening watch is maintained on 5205 kHz, 7876.5 kHz, and VHF channel 16 for distress calls.

The National Police can be contacted by e-mail, as follows:

nphq@mail.fm

Time Zone

The Federated States of Micronesia is covered by several Time Zones, as follows:

1. Yap and Chuuk—The Time Zone description is KILO (-10). Daylight Savings Time is not observed.
2. Pohnpei, Pingelap, and Kosrae—The Time Zone description is LIMA (-11). Daylight Savings Time is not observed.

U.S. Embassy

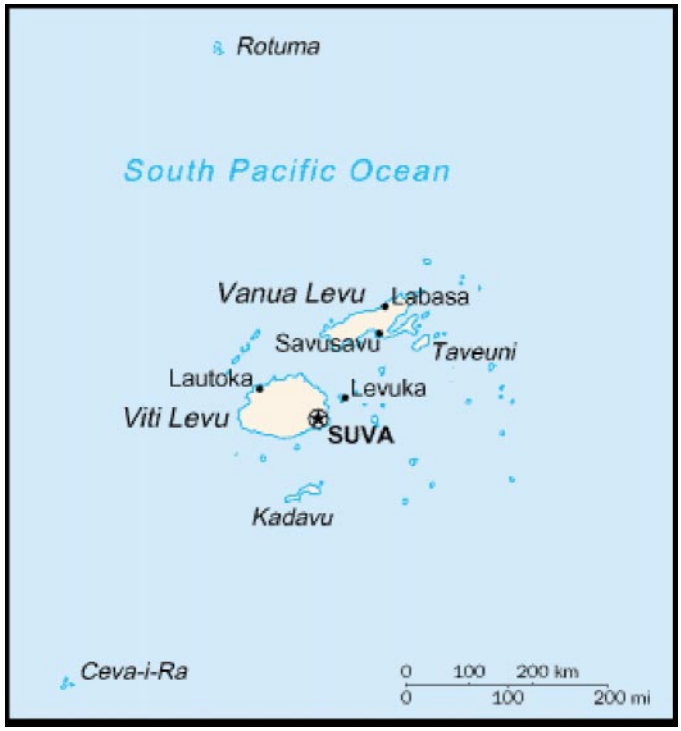
The U.S. Embassy for the Federated States of Micronesia is situated at Kolonia.

The mailing addresses are, as follows:

1. Micronesia address—
   P.O. Box 1286
   Kolonia, Pohnpei FM 96941
2. U.S. address—
   4120 Kolonia Place
   Washington, DC 20521-4120

U. S. Embassy Micronesia Home Page
http://kolonia.usembassy.gov

FIJI



General

Fiji, an independent nation within the British Commonwealth, consists of about 320 islands and islets located in the South Pacific Ocean between 15˚S and 22˚S, and 174˚E and 177˚W. The island of Rotuma (12˚30'S., 178˚00'E.) was added to the colony in 1881.

The two main islands are Viti Levu and Vanua Levu.

The climate is tropical marine having slight seasonal temperature changes; oceanic influences prevent undue extreme temperature and humidity variations. during the Southeast Trade Winds, which blow from May through November, the nights are cool and the rainfall amounts are the least.

The terrain for most of Fiji's larger islands is mountainous and volcanic. Mount Victoria, on Viti Levu, is the highest mountain, with an elevation of 1,424m. There are several other mountains with heights in the vicinity of 1,000m.

Generally, the smaller islands are of limestone and coral, their cliffs rising steeply to flat tops with little vegetation.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Fish Aggregating Devices

Fish aggregating devices, strings of floats attached to concrete block anchors by a rope and chain connection, may also be found in Fijian waters. These devices, used to attract fish, are usually marked by a flag.

Fish Rafts

Unmanned fish rafts, consisting of a number of poles lashed together and used to attract fish, are moored offshore in Fijian waters. The larger ones are about 12m long and about 2m in diameter. They are normally lit and carry radar reflectors.

The lights and mooring systems are prone to failure. Rafts may be encountered adrift and unlit.

Concentrations of fishing vessels may also be found in the vicinity of fish rafts.

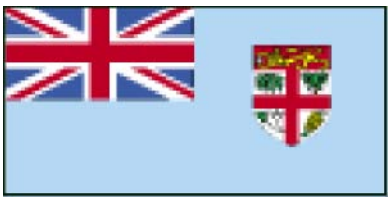
Storm Damage to Beacons

Beacons along the coast are frequently destroyed or damaged by tropical storms. It may take up to 1 year to repair or replace the beacons and they may not be rebuilt on their charted positions.

Currency

The official unit of currency is the Fiji dollar, consisting of 100 cents.

Government



Flag of Fiji

Fiji is a republic. The country is divided into four divisions and one dependency.

Fiji is governed by a President, appointed to a term of five years by the Great Council of Chief (the highest ranking members of the traditional chiefly system). The Prime Minister appointed by the President. The Cabinet is appointed by the Prime Minister from among members of Parliament.

The bicameral Parliament consists of a 34-member appointed Senate and a 71-member directly-elected House of Representatives serving 5-year terms; 46 House members are elected based on ethnic representation, with the remaining 25 seats elected with no ethnic restrictions.

The legal system is based on British law.

The capital is Suva.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Monday	Variable
April 12	National Youth Day
May 31	Ratu Sir Lala Sukuna Day
Second Saturday in June	Queen's Birthday
July 23	Constitution Day
October 11	Fiji Day
November 11	Prince Charles' Birthday
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on sugar, tourism, copra, gold, silver, clothing, lumber, and small cottage type industries.

Languages

English is the official language. Fijian and Hindistani are also spoken.

Mined Areas

Mines have been cleared from the following areas listed in the accompanying table, but vessels must not anchor nor should submarines bottom.

Vitu Levu
Rovundrau Bay—W entrance (18˚18'S., 178˚01'E.)
Rovundrau Bay—middle entrance (18˚17.6'S., 178˚04.2'E.)
Rovundrau Bay—E entrance (18˚17.5'S., 178˚ 06'E.)
Nukumbutho Passage (18˚11'S., 178˚28'E.)
Nukulau Passage (18˚11'S., 178˚31'E.)
Moturiki Channel (17˚48'S., 178˚48'E.)
West of Moturiki Island
West of Ovalau (17˚40'S., 178˚ 48'E.)
Southeast of Moon Reef (17˚32'S., 178˚32'E.)
Northeast of Wilkes Passage and Malolo Passage (17˚51'S., 177˚11'E.)
East and S of Navini Island (17˚42'S., 177˚14'E.)
North and S of Levuka Island (17˚39'S., 177˚16'E.)
Between Tai Islet and Tivoa Islet
Manava Passage (17˚21'S., 177˚ 48.6'E.)
Na Tobu Drauivi Passage (17˚19'S.,177˚51'E.)
Nukurauvula Passage (17˚19'S., 178˚00'E.)
Nananu Passage (17˚16'S., 178˚12'E.)
Vanua Leva
Kia Island Passage (16˚16'S., 179˚04'E.)
Mali Passage (16˚17'S., 179˚17'E.)
Sau Sau Passage (16˚11'S., 179˚30'E.)
Point Passage (16˚49'S., 179˚16'E.)
Nyavu Passage (16˚51'S., 179˚07.5'E.)
Kumbalau Passage (16˚52'S., 179˚06'E.)

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Fiji are, as follows:

Territorial Sea *	12 miles.

Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	Depth of 200m or the Limit of Exploitation.

* Claims archipelagic status.

Regulations

General

The master of every vessel shall anchor, moor, or place his vessel where the harbormaster may direct and shall not move nor allow the said vessel to be moved from such place without permission of the harbormaster and shall also remove his said vessel from any such place when ordered by the harbormaster.

No person shall anchor a vessel in the fairway of any channel so as to obstruct the approach to any wharf.

Vessels entering any harbor having onboard explosives or any material of a dangerous or inflammable nature shall, from the time of entering the harbor until such goods have been unloaded, by day display a red flag, and by night exhibit a red light, visible all round the horizon for a distance of at least 2 miles.

Masters of vessels arriving with such goods shall immediately furnish the harbormaster with particulars of the same.

Rhinoceros Beetle Regulations

Vessels proceeding from an area infested by rhinoceros beetles, which feeds on and destroys the heart of new growth shoots of the coconut palm, to clean areas must first obtain an inspection and clearance certificate. Full details should be obtained locally.

Clean areas are, as follows:

1. Lau Group.
2. Islands more than 5 miles N and E of Vanua Levu.
3. Kaduva Island.
4. Koro Island.

Infested areas are, as follows:

1. Viti Levu.
2. Vanua Levu and remaining islands.

Vessel Reporting System

A maritime surveillance safety service involving ship reporting has been established for all vessels, including small craft.

Reports should be sent daily to Suva Coast Radio Station (3DP) or by fax to MSC Fiji (679-331-4783).

The report should include the vessel's name, position, date and time of report, port of destination, and ETA.

Search and Rescue

A National Search and Rescue Committee coordinates search and rescue operations in the waters around Fiji. Rescue Coordination Centers (RCC) are located at RCC Suva and RCC Nadi. Rescue Subcenters may be temporarily established in other areas based on the situation.

Suva Coast Radio Station (3DP) maintains a continuous listening watch for distress traffic on 2182 kHz, and VHF channel 16.

The Fiji Maritime Surveillance Center can be contacted by e-mail, as follows:

msc@is.com.fj

Signals

Hurricane warning signals are, as follows:

1. Yellow pennant—Preliminary hurricane warning.
2. Black pennant—Final hurricane warning.
3. Night signal—Three red lights, vertically disposed, are displayed above the harbormaster's office in Suva and Lautoka when preliminary or final hurricane warnings are in force.

Time Zone

The Time Zone description is MIKE (-12). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at 31 Loltus Street, Suva.

The mailing address is 31 Loltus Street, P.O. Box 218, Suva.

U. S. Embassy Fiji Home Page
http://suva.usembassy.gov

FRENCH POLYNESIA

General

French Polynesia, formerly called the French Settlements in Oceania, is an Overseas Territory within the French Community. It consists of four distinct island groups containing some 130 islands in the South Pacific Ocean. The island groups extend from 7˚S to 29˚S, and from 131˚W to 156˚W.

The archipelagoes forming French Polynesia are scattered across 3,941 square kilometers of ocean.

The four islands groups constituting French Polynesia are the Marquesas Islands, the Tuamotu Archipelago, the Society Islands, the Austral Islands.

The Marquesas Islands

The Marquesas Islands, consisting of ten volcanic islands and a few small islets, extend in a NW and SE direction, between the parallels 7˚S and 11˚S, and the meridians 138˚W and 141˚W.

The five principal inhabited islands are Nuku Hiva, Ua Pu, Hiva Oa, Tahuata, and Fatu Hiva. The best known of the islands is Hiva Oa, a fertile and heavily-wooded high island.

All the islands are volcanic in origin; mountains in the interior of the islands rise to heights of 470 to1,230m. The coasts, composed of steep black cliffs, are nearly all steep-to and indented by bays.

Winds from E to NE are more pronounced from April to October, while in other months winds from E to NE are more prevalent. Gales are rare; when they do occur, it is usually in December.

The Tuamotu Archipelago

The Tuamotu Archipelago, consisting of 78 islands, is divided into two groups for administrative purposes; the Gambier Islands and their dependencies form the E group and the Tuamotu Islands form the W group. The archipelago extends for about 950 miles in a NW and SE direction, between the parallels 14˚S and 24˚S, and the meridians 135˚W and 149˚W.

The archipelago is also called the Paumotu Archipelago, the Low Archipelago, or the Dangerous Archipelago. With a few exceptions all the islands are low-lying coral atolls or rings of coral enclosing salt-water lagoons. The chief exception is the upraised island of Makatea, formerly noted for its phosphate deposits, now exhausted. It has a copra economy. Some of the atolls have their income augmented by the pearls found in the extensive lagoon areas.

The climate is tropical and the weather is generally hot. May through October is slightly cooler than the rest of the year. Most rain falls in the warmer months.

The Southeast Trade Winds blow throughout the year; the prevailing wind is usually E or ESE. Hurricanes occasionally occur, using from December through February.

The Society Islands

The Society Islands contains 12 major islands divided into a windward cluster of five islands and a leeward section of seven islands. They extend for about 400 miles in a WNW and ESE direction between the parallels 15˚S and 18˚S, and the meridians 148˚W and 155˚W.

All the islands are high, volcanic, and encircled by barrier reefs except for Tetiaro, which is an atoll.

The Windward Islands consist of Tahiti, Moorea, and the smaller islands of Mehetia, Tetiaroa, and Maiao.

The Leeward Islands consist of the volcanic islands of Huahine, Raiatea, Tahaa, Bora Bora, and Maupiti, together with the four small atolls of Tupai, Mopelia, Manuae, and Motu One. The latter three atolls are uninhabited.

Tahiti is the largest island of the group. It is formed of volcanoes with an isthmus and appears like a figure-eight.

The Austral Islands

The Austral Islands consist of the five inhabited islands of Rurutu, Tubuai, Rimatara, Raivavae, and Rapa, as well as the uninhabited Marotiri Rocks and Maria Islands. Mataura, on Tubuai, is the chief settlement.

The chain extends for about 800 miles in a WNW and ESE direction between the parallels 21˚S and 24˚S, and the meridians 147˚W and 155˚W.

The islands are volcanic in origin and moderately high, with the exception of Iles Maria, which form an atoll. All the islands are surrounded by reefs which are usually steep-to. The water is not very clear and the coral heads are difficult to sea.

The island of Tubuai is a high volcanic island measuring about 5 miles long and 3 miles wide. It is oval in shape with Mount Taita, 400m high, its highest point. A barrier reef encircles the island. There is an airstrip for light planes.

Tubuai is a very fertile island and coffee, copra, bananas, manioc (arrowroot), and oranges are grown here.

The climate is tropical but moderate.

The terrain is a mixture of rugged high islands and low islands with reefs.

Buoyage System

The IALA Buoyage System (Region A) is in effect. The IALA System is used to mark channels from seaward through gaps in the barrier reef and the main channels within the barrier reefs to important harbors and anchorages. See Chart No. 1 for further IALA Buoyage System information.

A Special System is used to mark minor channels within the barrier reefs where the direction of navigation cannot be determined without ambiguity. The edges of the channel are marked, as follows:

1. Landward side—Red can or spar buoys with a red hemisphere topmark, rounded part up.
2. Barrier reef side—green can or spar buoys with a green cone topmark, point down.

Beacons, with the same color and topmark, may be used in place of buoys in either system.

Cautions

Underground nuclear tests are conducted by the French government at Fangataufa (22˚15'S., 138˚45'W.) and Mururoa, 20 miles NNW of Fangataufa, at the SE end of the Tuamotu Archipelago. Access to the atolls and entry into their lagoons are prohibited. When tests are in progress, an area with a radius of 100 miles, centered on the atoll is considered dangerous and is controlled by the French authorities.

Currency

The official unit of currency is the Pacific franc, consisting of 100 centimes.

Firing Areas

Anti-aircraft firing exercises take place in the approach to Papeete, W of Tetiaroa, in an area bounded by lines joining the following positions:

a. 17˚10.0'S, 149˚36.2'W.
b. 16˚33.0'S, 149˚36.2'W.
c. then along the arc of a circle centered on position 17˚33.0'S, 149˚36.2'W to position 16˚40.1'S,150˚05.3'W.
d. 17˚12.7'S, 149˚47.5'W.
e. then along the arc of a circle centered on position 17˚33.0'S, 149˚36.2'W to position 17˚10.0'S,149˚36.2'W.

Vessels should avoid passing through the area. Notification of these exercises is made by Avurnav Papeete through Papeete Radio.

Fishing Areas

Fish Aggregating Devices (FADS) may be encountered in the waters throughout French Polynesia. These devices consist of a float of various descriptions, usually moored in deep water. The floats may not be lighted and are not usually charted.

Caution is advised as FADS are not maintained as aids to navigation; the lights, if fitted, are prone to failure, as are the float moorings. Concentrations of fishing vessels may also be found in the vicinity of FADS.

Government

Flag of French Polynesia

French Polynesia, a French territory since 1843, opted in November 1958 for the status of an Overseas Territory within the French Community.

French Polynesia is governed by a President of the Territorial Government and a President of the Territorial Assembly, both elected by members of the Territorial Assembly. The unicameral Territorial Assembly consists of 57 directly-elected members serving 5-year terms.

The legal system is based on French law.

The capital is Papeete.

Holidays

The following holidays are observed:

January 1	New Year's Day
March 5	Missionary Day
Good Friday	Variable
Easter Monday	Variable
May 1	Labor Day
May 8	World War II Victory Day
Ascension Day	Variable
Whitmonday	Variable
June 29	Autonomy Day
July 14	Bastille Day
August 15	Assumption Day
September 8	Autonomy Day
November 1	All Saint's Day
November 11	Armistice Day
December 25	Christmas Day

Industries

The main industries are based on tourism, pearls, agricultural processing, and handicrafts.

Copra is the main agricultural product. The copra output is processed into coconut oil for export, and into coconut meal for use as cattle feed by the local beef industry, although some is also exported. Coffee, vegetables, and fruits are grown only for local consumption.

Other island industries include textile fashion goods, handicrafts, foodstuffs, and a brewery. Tourism is very important to the island's economy.

Languages

French is the official language. Tahitian is widely spoken by the islanders.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of French Polynesia are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	Depth of 200m or the Limit of Exploitation.

Pilotage

Pilotage is compulsory for the port of Papeete but not for other ports or anchorages. Movements of naval vessels are normally carried out by military pilots, although it is customary for a civilian pilot to be engaged for the first entry and last departure of such vessels.

Licensed pilots for other ports and anchorages are available at Papeete and may be obtained by VHF, by displaying the customary signals, or, preferably, by giving 24 hours notice by radio. Pilots board about 2 miles NW of Passe de Papeete.

Regulations

Dangerous Cargo

Vessels carrying bulk liquid hydrocarbons, vessels carrying dangerous cargo, and vessels over 120m in length are required to maintain a continuous listening watch on VHF channel 6 when navigating within the territorial waters of French Polynesia.

These same vessels, when bound for a port or roadstead in the Society Islands, must report the following information to the Captain of the Port, Papeete, at least 3 days prior to arriving at the pilot station:

Designator	Required information
ALFA	Vessel name and nationality
BRAVO	Tonnage
CHARLIE	Length overall and beam
DELTA	Maximum arrival draft
ECHO	Destination
FOXTROT	Date and time (Zone Description WHISKEY) of arrival at the pilot station
GOLF	Type and quantity of cargo
HOTEL	Type and quantity of bunkers
INDIA	State of propulsion equipment
JULIETT	State of steering equipment
KILO	State of anchoring equipment
LIMA	State of navigational equipment
MIKE	State of radio equipment

Ports of Entry

The entry to French Polynesia by commercial vessels is permitted only through the following ports:

1. Papeete, Iles du Vent.
2. Hao, Tuamotu Archipelago.
3. Mururoa, Tuamotu Archipelago.

The entry through Hao and Mururoa is further restricted by the Regulated Area restrictions applying to the Tuamotu Archipelago as described below.

Upon arrival at or prior to departure from a port in French Polynesia, the following information should be sent to the port authority:

1. Vessel name and type, country of registry, and owner's name.
2. Last or next port of call, as appropriate.
3. Nature of any cargo.
4. Number of crew.
5. Passenger list.

Rhinoceros Beetle Regulations

Every vessel arriving in French Polynesia or its dependencies from an area infested with rhinoceros beetles, which feeds on and destroys the heart of new growth shoots of the coconut palm, is required to anchor at least 400m offshore between sunset and sunrise with its holds closed until a sanitary inspection has been completed. If necessary, disinfestation will be carried out before a vessel is permitted to berth alongside.

The areas regarded by French authorities as infested are, as follows:

1. Bismarck Archipelago.
2. Cuba.
3. Dominican Republic.
4. Fiji.
5. Haiti.
6. Indonesia.
7. Irian Jaya (Manokwari, Sarmi, and Sorenarwa).
8. Japan.
9. Palau.
10. Philippines.
11. Puerto Rico.
12. Samoa.
13. Taiwan.
14. Tonga.
15. Wallis and Futuna.

Regulated Area—Tuamotu Archipelago

Navigation of the territorial and inner waters of the Tuamotu Archipelago located S of 17˚20'S and E of 145˚45'W. is regulated. No vessel can enter these waters without permission of the French government.

Requests to enter these waters should be sent at least 3 working days in advance, as follows:

1. Vessels entering from ports outside French Polynesia—requests should be sent to the Governor of the territory.
2. Vessels sailing from ports in French Polynesia—requests should be sent to the Administrator of Mercantile Marine in Papeete.

The request should state whether the requirement is to pass through only territorial waters or to pass through both territorial and internal waters.

Search and Rescue

Maritime Rescue Coordination Center (MRCC) Papeete coordinates local search and rescue operations. Coast Radio Station Mahina (FJA) maintains a continuous listening watch on 2182 kHz and VHF channel 16.

MRCC Papeete can be contacted by e-mail, as follows:

mrcc.papeete@mail.pf

Signals

The following special traffic signals may displayed in French Polynesia:

French Polynesia—Special Traffic Signals

Day	Night	Meaning
Three red balls, vertically disposed	Three red lights, vertically disposed	Port closed
Three green balls, vertically disposed	Three green lights, vertically disposed	Port open
A blue flag	One red light, one green light, one red light, vertically disposed	Movement prohibited

The use of these signals may indicate obstructions exist in the fairway. Mariners should proceed with caution and obey any signals made by the port authorities.

Time Zone

The Time Zone description for the Tuamotu Islands, the Society Islands, and the Austral Islands is WHISKEY (+10). Daylight Savings Time is not observed.

The Time Zone description for the Gambier Islands is VICTOR (+9). Daylight Savings Time is not observed.

The standard time of the Marquesas Islands is UT (GMT) +9 hours 30 minutes. Daylight Savings Time is not observed.

U.S. Embassy

There are no U.S. diplomatic offices in French Polynesia.

French Polynesia is an overseas territory of France.

GUATEMALA

General

Guatemala is located in Central America, bordering the Caribbean Sea, between Honduras and Belize and bordering the North Pacific Ocean, between El Salvador and Mexico. It has about 70 miles of coast on the Caribbean side and 220 miles on the Pacific side. San Jose is the largest port on the Pacific coast.

The climate is tropical; hot and humid in the lowlands, and cooler in the highlands.

The terrain is mostly mountains with narrow coastal plains and rolling limestone plateaus.

The entire Pacific coast is bordered by a 30 mile wide belt of tropical lowland backed inland by high mountainous country of volcanic origin. Many of the peaks of this range rise to elevations in excess of 3,658m.

The Pacific slope of this range is the most densely populated section of the country. Violent earthquakes are a frequent occurrence and in the past have caused considerable damage to the capital city of Guatemala.

The N part of the country contains the great plain of Peten, a low, humid, and heavily forested area which comprises about one-third of the total territory of the state.

The greater part of this region is uncultivated, although many districts have extremely fertile soils and an abundance of water.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

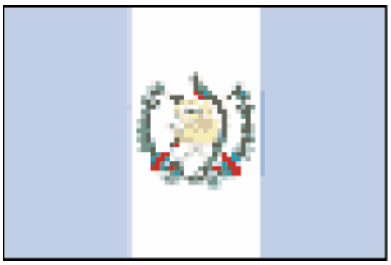
The official unit of currency is the quetzal, consisting of 100 centavos.

Government

Guatemala is a republic with a traditionally dominant executive. The country is divided into 22 departments.

Guatemala is governed by a directly-elected President who serves a 4-year term. The unicameral Congress consists of 158 directly-elected members serving 4-year terms.

The capital is Guatemala City.



Flag of Guatemala

Holidays

The following holidays are observed:

January 1	New Year's Day
Holy Thursday	Variable
Good Friday	Variable
Holy Saturday	Variable
Easter Sunday	Variable
May 1	Labor Day
June 30	Army Day
August 15	Assumption Day
September 15	Independence Day
October 20	Revolution Day
November 1	All Saints' Day
December 24	Christmas Eve (half day)
December 25	Christmas Day
December 31	New Year's Eve (half day)

Industries

The main industries are based on food and beverages, tobacco, chemicals, textiles, petroleum, metals, rubber, and tourism.

Languages

Spanish and Amerindian are the official languages.

Navigational Information

Enroute Volumes

Pub. 148, Sailing Directions (Enroute) Caribbean Sea Volume 2.

Pub. 153, Sailing Directions (Enroute) West Coasts of Mexico and Central America.

Maritime Claims

The maritime territorial claims of Guatemala are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	Depth of 200m or the Limit of Exploitation.

* Claims Bahia de Amatique as a historic bay.

Search and Rescue

A Maritime Rescue Coordination Center is located at the Joint Operations Center, Guatemala City, for both the Atlantic coast and the Pacific coast.

Time Zone

The Time Zone description is SIERRA (+6). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at 7-01 Avenida de la Reforma, Zone 10, Guatemala City.

The mailing address APO AA 34024.

U. S. Embassy Guatemala Home Page
http://guatemala.usembassy.gov

HONDURAS

General

Honduras is located in Central America, bordering the Caribbean Sea, between Guatemala and Nicaragua and bordering the North Pacific Ocean, between El Salvador and Nicaragua. Honduras has a 400 mile coastline along the Caribbean Sea and a short 40 mile Pacific outlet in the Golfo de Fonseca. It shares borders with Nicaragua, Guatemala, and El Salvador.

Puerto Amapala, the only port on the Pacific coast, is located on the NW side of Isla Tigre.

The terrain is predominately mountainous, with a narrow plain on the Pacific side and a wide coastal plain on the Caribbean side. The high mountain ranges in the interior rise to elevations of about 3,048m in places, but elsewhere, the heights rarely exceed 1,524m.

Both coastal areas are typically tropical with a hot humid climate. The climate is temperate in the mountains.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the lempira, consisting of 100 centavos.

Government

Flag of Honduras

Honduras is a democratic constitutional republic. The country is divided into 18 departments.

Honduras is governed by a directly-elected President who serves a 4-year term. The unicameral National Congress is composed of 128 members, serving 4-year terms, elected by proportional representation.

The legal system is based on Roman civil law, Spanish civil law, and English common law.

The capital is Tegucigalpa.

Holidays

The following holidays are observed:

January 1	New Year's Day
Holy Thursday	Variable
Good Friday	Variable
Holy Saturday	Variable
Easter Sunday	Variable
April 14	Panamerican Day
May 1	Labor Day
September 15	Independence Day
October 3	Francisco Morazan's Birthday
October 12	Columbus Day (Dia de la Raza)
October 21	Armed Forces Day
December 25	Christmas Day

Industries

The main industries are based on manufacturing, agriculture, forestry, and mining.

Languages

Spanish and Amerindian are the official languages.

Navigational Information

Enroute Volumes

Pub. 148, Sailing Directions (Enroute) Caribbean Sea Volume 2.

Pub. 153, Sailing Directions (Enroute) West Coasts of Mexico and Central America.

Maritime Claims

The maritime territorial claims of Honduras are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.

* Claims straight baselines. Claims Golfo de Fonseca as a historic bay.

Maritime Boundary Disputes

Advised by the ICJ to adopt a triparite resolution with El Salvador and Nicaragua to establish a maritime boundary in the Golfo de Fonseca which considers Honduran access to the Pacific Ocean.

Territorial dispute with Colombia and Nicaragua over Isla de San Andres (12˚33'N., 81˚43'W.), Isla Providencia (13˚21'N., 81˚22'W.), and the Quito Sueno Bank (14˚15'N., 81˚15'W.) region.

Conejo Island, in Golfo de Fonseca, claimed by El Salvador.

Claims Sapodilla Cays (16˚07'N., 88˚16'W.) off the coast of Belize.

Search and Rescue

The Central America Air Traffic Control Center (CENAMER ACC), in conjunction with the Honduran Armed Forces, is responsible for the coordination of search and rescue operations. RCC Honduras cooperates with the Belize Air Traffic Service and the Belize Defense Forces during normal hours of operation.

Time Zone

The Time Zone description is SIERRA (+6). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at Avenida La Paz, Apartado Postal No. 3453, Tegucigalpa.

The mailing address is Avenida La Paz, Apartado Postal Number 3453, APO AA 34022, Tegucigalpa.

U. S. Embassy Honduras Home Page
http://www.usmission.hn

HONG KONG

General

Hong Kong, a former British Crown Colony, now a Special Administrative Region (SAR) of the People's Republic of China, is located in Eastern Asia, bordering the South China Sea and China. It lies just within the tropics on the SE coast of China. The SAR consists of 236 islands and islets, many of them waterless and uninhabited.

The climate is tropical monsoon. It is cool and humid in the winter, hot and rainy from spring through summer, and warm and sunny in the fall.

The terrain is hilly to mountainous with steep slopes and lowlands are reported in the N.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Hong Kong is susceptible to typhoons. These storms may be generated over 1,000 miles away in the Pacific Ocean or may occur with little warning less than 400 miles away. Some of the worst storms to hit Hong Kong have intensified within the last 100 miles.

Storm warning signals are issued at 6-hour intervals whenever a tropical disturbance occurs within an area bounded by the following positions, which covers the majority of shipping routes radiating from Hong Kong:

a. 10˚00'N, 105˚00'E.
b. 10˚00'N, 125˚00'E.
c. 30˚00'N, 125˚00'E.
d. 30˚00'N, 105˚00'E.

These bulletins refer only to tropical storms. Information on tropical cyclones may be broadcast by the Vessel Traffic Center.

Currency

The official unit of currency is the Hong Kong dollar, consisting of 100 cents.

Firing Areas

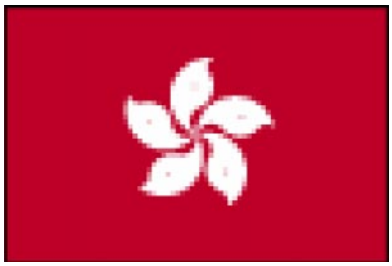
Port Shelter Range.—Small arms and Air Force weapons firing in an area bounded by lines joining the following positions:

a. 22˚24'18"N, 114˚16'06"E.
b. 22˚22'42"N, 114˚15'42"E.
c. 22˚21'48"N, 114˚15'42"E.
d. 22˚20'48"N, 114˚15'06"E then SE along Clear Water Bay Road to
e. 22˚18'00"N, 114˚17'12"E.
f. 22˚18'00"N, 114˚17'54"E.
g. 22˚20'24"N, 114˚20'24"E.
h. 22˚22'00"N, 114˚19'30"E then along the NE coastline of Tai Tau Chau to the point of beginning.

Pak Kong Range.—Artillery and heavy weapons firing in an area bounded by lines joining the following positions:

a. 22˚20'24"N, 114˚20'24"E.
b. 22˚18'00"N, 114˚17'54"E.
c. 22˚16'36"N, 114˚18'42"E.
d. 22˚16'18"N, 114˚20'48"E.
e. 22˚15'54"N, 114˚22'00"E.
f. 22˚16'00"N, 114˚24'00"E.
g. 22˚19'54"N, 114˚23'54"E.
h. 22˚19'48"N, 114˚21'54"E.
i. 22˚22'18"N, 114˚20'30"E.

Government



Flag of Hong Kong

Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China. China has promised to respect the existing social and economic systems of Hong Kong.

Hong Kong is governed by a Chief Executive elected to a 5-year term by a special Election Committee. The unicameral Legislative Council consists of 30 members indirectly elected by functional constituencies and 30 directly-elected members; all members serve 5-year terms.

The legal system is based on English common law.

The capital is Victoria.

Holidays

The following holidays are observed:

January 1	New Year's Day
Chinese New Years (3 days)	Variable
Ching Ming (Tomb Sweeping Day)	Variable
Good Friday	Variable
Holy Saturday	Variable
Easter Sunday	Variable
Easter Monday	Variable
May 1	Labor Day
Buddha's Birthday	Variable
Dragonboat Festival	Variable
July 1	Hong Kong Special Administrative Region Day
Autumn Festival	Variable
October 1	National Day
Winter Solstice Festival	Variable
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on textiles, clothing, tourism, electronics, plastics, toys, watches, and clocks. Hong Kong has a bustling free market economy with few or no tariff barriers.

The SAR has over 20,000 registered factories ranging from small cottage types to large highly complex modern establishments. Natural resources are limited, and food and raw material must be imported.

Languages

Chinese and English are the official languages.

Navigational Information

Enroute Volume

Pub. 161, Sailing Directions (Enroute) South China Sea and Gulf of Thailand.

Maritime Claims

The maritime territorial claims of Hong Kong, which are the same as for China, are, as follows:

Territorial Sea	200 miles.
Contiguous Zone *	24 miles.
Fisheries or Economic Zone **	200 miles.
Continental Shelf	200 miles or the Continental Shelf.

* Also considered a Security Zone.

** Claims right to create a Safety Zone around any structure in the Economic Zone, the right to require authorization to lay submarine cables and pipelines, and the right to broad powers to enforce laws in the Economic Zone.

Pilotage

Pilotage is available 24 hours and is compulsory for most vessels. For further information, see Sector 2 in Pub. 161, Sailing Directions (Enroute) South China Sea and the Gulf of Thailand.

Regulations

International Ship and Port Facility (ISPS) Code

The ISPS Code applies to ships on international voyages and port facilities directly interfacing with these ships. The following regulations apply to ships covered by the ISPS Code entering or staying in Hong Kong waters:

1. **Pre-arrival procedures.—**A vessel calling at a port facility in Hong Kong or intending to transit Hong Kong waters en route to ports in the delta of the Pearl River should provide additional security-related information in addition to its advance notice of arrival. The required information, which should be sent by facsimile (852-2858-6646) to the Hong Kong Vessel Traffic Center (VTC), is, as follows:
   a. Ship's name.
   b. Call sign.
   c. IMO number.
   d. Buoy and/or Anchorage (state whether facilities "will be used/will not be used").
   e. Availability of ISSC or Interim ISSC (state Yes or No).
   f. Date of expiration of ISSC or Interim ISSC (in format of YYYY/MM/DD).
   g. Issuing authority of ISSC or Interim ISSC.
   h. Security level ship is currently operating at (Level 1, Level 2, or Level 3 with reason(s), if known).
   i. Last port of call
   j. Name of last port facility.
   k. Was the last port facility ISPS compliant (state Yes or No)?
   l. Security level of last port facility (state Level 1, Level 2, or Level 3).
   m. For the last ten calls at port facilities after July 1, 2004, has the ship interfaced with a facility that was not ISPS compliant (state Yes or No)?
   n. Within the period of the last ten calls at port facilities, has the ship conducted ship-to-ship activities with another ship that was not ISPS compliant (state Yes or No)?

2. **Procedures for vessels remaining in port.—**While staying in the port of Hong Kong, ship owners or agents should observe the maritime security level of the port and put in place necessary security measures as prescribed in the ship's security plan. The maritime security levels for the port of Hong Kong and for Hong Kong registered ship can be found on the following web site:

Hong Kong Security Levels
http://marsec.mardep.gov.hk/marseclevels.html

Under certain circumstances, the port facility security officer of a port facility at which a ship is berthed may request the master or the ship security officer to sign a Declaration of Security (DoS) in accordance with the port facility security plan.

3. **Procedures for ships mooring at buoys and anchorages.—**Government mooring buoys and anchorages are managed by the Marine Department (MD). These port facilities are also subject to ISPS Code requirements. Ships intending to moor at these facilities are required to sign a DoS with the MD under the following circumstance:
   a. The ship does not have a valid ISSC or Interim ISSC,
   b. The ship is operating at Security Level 3 or at a security level higher than that prevailing in Hong Kong,
   c. The ship has come from a non-ISPS compliant port facility, and
   d. It is required to do so by the Designated Authority.

Notice of ETA

Vessels should send their ETA to the Marine Department Hong Kong at least 24 hours prior to arrival or immediately upon departure from a port less than 24 hours sailing time from Hong Kong.

The pre-arrival notification for all vessels should state the following information:
1. Vessel's name.
2. Call sign or MD reference number (a number assigned to the vessel for the purpose of reporting arrival and departure if visiting Hong Kong for the first time).
3. Flag.
4. Type.
5. GRT.
6. LOA (in meters).
7. Number of crew including master.
8. Purpose of call in Hong Kong and intended berth or anchorage on arrival.
9. Estimated maximum draft of vessel in meters upon arrival.
10. Any defects affecting maneuverability of seaworthiness, or special conditions of the vessel or its cargo.
11. Quantities and categories of dangerous goods on board including radioactive materials (insert "None" if applicable).
12. Name of agent in Hong Kong (insert "None" if no agent appointed and indicate whether an agent is to be appointed or whether the master is to act as agent).
13. Name of master of vessel.
14. Intended pilot boarding station if pilot is required (Note.—Pilots should be requested, through the agent, from Hong Kong Pilots Association).
15. ETA (expressed as "YY/MM/DD/hh/mm") at intended pilot boarding station.

16. Last port of call (state name of port and country or territory).
17. Height to highest point of vessel in meters above waterline on arrival.
18. Any other relevant information (if applicable).

Tankers should state the following information:

1. Vessel's name.
2. Call sign.
3. Flag.
4. LOA (in meters).
5. Maximum draft.
6. Present dwt.
7. Date keel laid.
8. Cargo type; quantity (in tons); and whether for loading, discharging, transshipment, or transit.
9. ETA at intended pilot boarding position, special anchorage, or berth in the waters of Hong Kong.
10. ETD from intended berth in the waters of Hong Kong.
11. Intended berth.
12. In the case of a vessel carrying liquefied gas in bulk, details of any certificate of fitness with respect to that cargo, including number, name of person or body issuing the certificate, date of issue, date of latest survey and date of expiration, and type of liquefied gas carried.
13. In the case of a vessel carrying more than 2,000 tons of oil in bulk, details of any certificate of insurance, insuring against risk of pollution with respect to that cargo, including number, name of person or body issuing the certificate, date of issue, and date of expiration.
14. In the case of a vessel carrying (or to carry) any noxious liquid substances in bulk, details of any International Pollution Prevention Certificate with respect to that cargo, including number, name of person or body issuing the certificate, date of issue, date of latest survey and date of expiration, and indicating whether for loading, discharge, transshipment, or transit.
15. Whether a MARPOL surveyor is required.
16. Whether a fixed inert gas system is fitted in the vessel.
17. Whether a fixed tank washing system is fitted in the vessel tanks.
18. The category of the vessel as defined under Regulation 13G of Annex 1 to MARPOL 73/78.
19. Delivery date of the vessel.
20. Compliance with the Condition Assessment Scheme (CAS) and information concerning Protective Location (PL) and Hydrostatic Balance Loading (HBL), if applicable.

When permission to enter the waters of Hong Kong has been granted, the master of the vessel shall provide initial reports to the VTC on VHF channel 12 when the vessel is in the vicinity of the seaward limits of the Vessel Traffic Service.

Navigation Regulations

Normally, ships enter and leave Hong Kong berths via the Lam Tong Hoi Hap Channel (Tathong Channel); however, ships assigned berths in the vicinity of Green Island should proceed through Lema Channel to East Lamma Channel.

In passing through Lema Channel, ships should remain as far N as is feasible for safe navigation and never less than 5 miles N of the NE head of Tan Kan Tao.

Typhoon Season Regulations (15 May to 31 October)

Every person in charge of a vessel shall comply with the requirements of the Director of Marine, who may order such vessel to anchor or secure in any place he may direct, or prohibit anchoring or securing in any place, and who may order the vessels to be removed to another place within the SAR.

Except with the prior permission of the Director, no dead ship shall be anchored, moored, or secured at any place within the waters of the SAR nor, except with such permission, shall any repairs be undertaken upon any ship which is so anchored, moored, or secured which will result in such ship becoming a dead ship.

The expression "dead ship" means any ship exceeding 50m in length, other than a laid-up ship, which is unable to proceed under its own power, unable to maneuver with its own steering gear, unable to work its own anchors, or unable to maintain the watertight integrity of the ship.

Upon a local storm warning signal, vessels at government mooring buoys shall clear away anchors and cables and raise all possible steam on the main engines. Vessels shall, if so directed, be ready to leave their mooring, at any time.

Upon a local storm signal other than No. 1 being hoisted, vessels at government buoys not being special typhoon moorings shall, within 2 hours, move to a typhoon anchorage or to special typhoon moorings. The Director may at his discretion order a vessel at a special typhoon mooring to leave that mooring.

Any ship within the waters of the SAR shall have on board at all times such number of crew as, in the opinion of the director of marine, is qualified and is capable of carrying out all duties which may reasonably be required to ensure the safety of the ship having regard to the circumstances pertaining thereto. Masters or their agents requesting a buoy are advised to ascertain whether it is considered safe for use under typhoon conditions.

Nothing in these regulations shall prevent any vessel which is already at a typhoon mooring buoy from shifting to an anchorage if such is preferred.

Harbor Regulations

Any vessel to which the International Code signal L is made locally by flag, sound, or flashing lamp from a Marine Department, Police, or Customs and Excise Department launch or a Government signal station, shall stop until authorized to proceed.

No rubbish, oil, or other substances are to be disposed of by any vessel within the waters of the harbor.

No vessel shall in any part of the SAR emit smoke (including soot, ash, gritty particles, or oil) in such quantity as to be a nuisance.

Additional information on harbor regulations pertaining to pilots, speed, mast heights, restricted areas, etc. will be found in Sector 2 of Pub. 161, Sailing Directions (Enroute) South China Sea and the Gulf of Thailand.

Quarantine Regulations

On arrival, all vessels shall proceed to a quarantine anchorage unless pratique has been obtained by radio. Pratique may be obtained by radio if:

1. The vessel has not called at a smallpox or plague-infected port within 14 days of arrival in Hong Kong.
2. The vessel has not called at a cholera-infected port within 5 days of arrival in Hong Kong. If the vessel has called at a cholera-infected port, the Port Health Officer has discretion to grant radio pratique.
3. There are not more than 24 passengers on board at the time of arrival.
4. There are more than 24 passengers and a ship's surgeon on board at the time of arrival.
5. The master sends the following information not more than 30 hours and not less than 8 hours before arrival:
   a. Ports of call and dates of departure during the 14 days prior to arrival.
   b. Number of passengers and crew on board.
   c. A statement that all persons on board are healthy and have valid International Vaccination Certificates against smallpox.
   d. A statement indicating whether any case of infectious disease has occurred on board during the voyage.
   e. Whether any person on board is sick.
   f. The date of issue of the deratting or deratting exemption certificate.
   g. Whether the vessel is an oil tanker, container vessel, or LASH ship.
   h. Whether foodstuff is carried as cargo.

No vessel, which is compelled to leave the quarantine anchorage from stress of weather shall communicate except by signals with the shore or with any other vessel, and such vessels shall return to the quarantine anchorage immediately until such stress of weather has subsided.

In case of stress of weather involving probable danger to the vessel, the vessel may remove for a time, but shall be deemed, nevertheless, for all purposes to be subject to all other regulations applicable to such vessels.

Dangerous Cargo Regulations

Vessels carrying explosives shall not anchor, without the permission of the Director of Marine, within 450m of any Government Explosives Depot or within 450m of any other vessel.

Vessels carrying explosives shall show the following signals until the Director of Marine determines the holds are clean and ventilated:

1. By day—The International Code flag "B" at the highest masthead.
2. At night—A red light at a height of not less than 6m above the uppermost deck.

Vessels carrying petroleum having a flash point of less than 65.5˚C shall show the following signals until the Director of Marine determines the holds are clean and ventilated:

1. By day—A red flag of not less than 0.9m square with a white circular center 1.5cm in diameter at the highest masthead and shall also fly the International Code signal "SU7."
2. At night—A red light at a height of not less than 6m above the uppermost deck.

Vessels carrying dangerous cargo, upon arrival in Hong Kong, shall anchor in one of the prescribed Dangerous Goods Anchorages, and shall obtain permission from the Director of Marine before going alongside any wharf or shifting berth.

Vessels carrying Category 5 dangerous cargo (Classes 1, 2, or 3) shall not enter or remain in that part of Hong Kong Harbor, without permission of the Director of Marine, bounded, as follows:

1. On the E—A line drawn from a position on Hong Kong Island near Pak Kok (North Point) (22˚17.7'N., 114˚12.0'E.) in a 334˚ direction to the Kowloon Peninsula.
2. On the E—A line drawn from position 22˚16.5'N, 114˚07.0'E on Hong Kong Island in a 329˚ direction to the W side of Tsing Chau (Green Island) and then on a bearing of 026˚ to the SW side of Ngong Shuen Chau (Stonecutters Island).

When a local storm signal other than No. 1 or No. 3 is broadcast/hoisted, vessels carrying Category 1 or Category 5 dangerous shall, unless otherwise directed by the Director of Marine, proceed outside the harbor and remain outside the harbor until such signal is lowered.

All dangerous cargo is loaded or discharged in one of the Dangerous Cargo Anchorages, unless the vessel has received permission from the Director of Marine to use the oil wharves at Tsing Yi.

All vessels, with keels laid on or after 12 April 1972 and which are carrying bulk chemicals, must possess a Certificate of Fitness in accordance with the IMO-adopted *Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk* before such vessels can enter or leave the Hong Kong SAR.

Search and Rescue

The Maritime Rescue Coordination Center (MRCC) Hong Kong, located at Hong Kong Marine Rescue Radio (VRC), can be contacted by e-mail, as follows:

hkmrcc@mardep.gov.hk

Hong Kong Marine Rescue Radio (VRC) maintains a continuous listening watch on GMDSS frequencies for distress traffic. Hong Kong Radio (VRX) maintains a continuous listening watch on 2182 kHz and VHF channel 16 for distress traffic.

Signals

Quarantine Signals

Ships granted radio pratique should, when entering the Hong Kong SAR, display the following signals:

1. By day—International Code flags TO.
2. At night—Three white lights, vertically disposed.

Storm Signals

Local storm signals are broadcast within the Hong Kong SAR and are displayed at the Cheung Chau Aeronautical Meteorological Station located on a small hill lying about 0.5 mile E of the W extremity of Cheung Chau (22˚13'N., 114˚01'E.). The signals are listed in the table in the Appendix.

Signal No. 1 is a cautionary or stand-by signal hoisted when a tropical disturbance exists which may be a potential threat to Hong Kong Harbor. At this early stage it is not possible to

forecast with any certainty whether gale or typhoon winds may actually occur in the area.

Signal No. 8 (8NE, 8SW, 8NE, and/or 8NW) conveys a definite warning of gale winds from a specified direction.

Signal No. 9 may not necessarily be used if conditions warrant the display of Signal No. 10 as soon as it is evident that the gale winds will increase.

When Signal No. 1 is broadcast/hoisted, the crews of vessels in Hong Kong Harbor, as well as personnel required to carry out safety preparations on land, should be placed on stand-by. Any safety preparations which may take time to complete should be started.

When Signal No. 3 is broadcast/hoisted, all safety preparations should begin at once. It would be very dangerous to wait for the broadcasting/hoisting of Signal No. 8 before taking precautionary actions.

Time Zone

The Time Zone description is HOTEL (-8). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in Hong Kong are, as follows:

1. East Lamma Channel. (IMO adopted)
2. Tathong Channel. (IMO adopted)
3. Dangan Shuido and Lantau Channel. (Government of Hong Kong)
4. Approaches to Hong Kong Harbor. (Government of Hong Kong)

U.S. Embassy

The Chief of Mission, Consul-General is situated at 26 Garden Road, Central, Hong Kong.

The mailing address is PSC 464, Box 30, FPO AP 96522-0002.

U. S. Consulate General Hong Kong and Macau Home Page
http://hongkong.usconsulate.gov

Appendix

Hong Kong Harbor—Local Storm Signals					
Signal No.		Day signal	Night signal	Meaning	Remarks
1	Stand-by only	Black T	Three white lights, vertically disposed	A depression or typhoon centered within 500 miles of Hong Kong may affect the area.	
3	Strong wind	Inverted black T	One white light between two green lights, vertically disposed	Strong wind (mean wind speed of 22-23 knots) expected, which may reach gale force later.	When hoisted, this signal normally gives about 12 hours warning of a strong wind in Hong Kong Harbor.
8NW	Northwest gale	One black triangle, point up	One white light over two green lights, vertically disposed	Gale (mean wind speed of 34 knots and up) expected from the NW quadrant. Gusts may exceed 64 knots.	These signals are equally significant regarding wind speed. Normally, the first of these signals is hoisted about 12 hours before the gale affects Hong Kong Harbor.
8SW	Southwest gale	One black triangle, point down	One green light over two white lights, vertically disposed	Gale (mean wind speed of 34 knots and up) expected from the SW quadrant. Gusts may exceed 64 knots.	These signals are equally significant regarding wind speed. Normally, the first of these signals is hoisted about 12 hours before the gale affects Hong Kong Harbor.
8NE	Northeast gale	Two black triangles, points up	One white light below two green lights, vertically disposed	Gale (mean wind speed of 34 knots and up) expected from the NE quadrant. Gusts may exceed 64 knots.	
8SE	Southeast gale	Two black triangles, points down	One green light below two white lights, vertically disposed	Gale (mean wind speed of 34 knots and up) expected from the SE quadrant. Gusts may exceed 64 knots.	
9	Increasing gale	Two black triangles, points together, vertically disposed	Three green lights, vertically disposed	Gale expected to increase	The sustained wind speed will reach 48 to 63 knots within 3 hours of this signal being hoisted.
10	Typhoon	Black cross	One green light between two red lights, vertically disposed	Typhoon wind (mean wind speed of 64 knots and up) expected from any direction.	Signal hoisted as soon as there are definite indications that the sustained wind speed in Hong Kong Harbor is likely to exceed 64 knots.

INDONESIA

General

Indonesia, located in Southeast Asia, is an archipelago that forms a natural barrier between the Indian Ocean and the Pacific It consists of an archipelago of over 17,000 islands extending up to about 3,100 miles along the equator between the mainland of Southeast Asia and Australia.

The main islands are Sumatera (Sumatra), Java, Sulawesi (formerly Celebes), the S part of Kalimantan (Borneo), and Irian Jaya (W half of New Guinea).

Indonesia shares land borders with Malaysia, East Timor, and Papua New Guinea.

The climate is tropical, being hot and humid. It is more moderate in the highlands.

The terrain is mostly coastal lowlands. The larger islands have interior mountains.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Rigs

Movable oil drilling rigs and production platforms may be encountered off the coasts of Indonesia and in open waters.

Buoys associated with the drilling operations are frequently moored in the vicinity of these structures. The positions of these rigs and buoys are frequently changed and are generally promulgated by radio navigational warnings.

Aids

Within Indonesian waters, lights and buoys are considered unreliable, being frequently irregular, extinguished, missing or off station.

Piracy

It was reported (1995) that vessels have been attacked by armed thieves in the vicinity of the Malacca and Singapore Straits, mainly near Phillip Channel. These attacks were usually made from fast motor boats approaching from astern. Loaded vessels with low freeboard seem to be vulnerable.

The International Maritime Bureau (IMB) of the International Chamber of Commerce has established a Piracy Countermeasures Center at Kuala Lumpur. This center operates for the SE Asian Region and is able to receive reports from vessels concerning attacks and advise of danger areas.

Piracy warnings originated by the Center will be broadcast daily to NAVAREA XI, VIII, and X through Enhanced Group Calling using the SafetyNET System.

For further details, the IMB Center can be contacted, as follows:

IMB Piracy Reporting Center
ICC International Maritime Bureau
P.O. Box 12559
50782 Kuala Lumpur
Malaysia
Telephone: +60-3-2031-0014
Facsimile: +60-3-2078-5769
Telex: +84-34199 (IMBPCI MA34199)
E-mail: imbkl@icc-ccs.org.uk

IMB Piracy Reporting Center Home Page

http://www.iccwbo.org/ccs/menu_imb_piracy.asp

Minesweepers

Indonesian vessels carrying out minesweeping operations or minesweeping training have been greatly hampered in their maneuverability, therefore all other vessels must give them a wide berth. Minesweeping vessels will make the signals, according to the International Code of Signals, to indicate that they are in operation and to indicate the presence of minsweeping equipment.

When a minesweeper or a formation of minesweepers displays signals that show a minesweeping operation, other vessels must steer clear of the danger side or sides, keeping at a distance of at least 500m and must not cross the bow or the stern of such vessels at a distance of less than 1,000m.

For their own safety, steamers or sailing vessels must try to steer clear of ships making these signals and not approach them within the distances specified above.

Currency

The official unit of currency is the rupiah, consisting of 100 sen (sen no longer used).

Firing Areas

When firing practice is held on the N coast of Madura, in the E and W channels of Surabaya, in the area around Probolinggo, in Teluk Balikpapan, and in the region of Tarakan, one or more of these areas of the sea is unsafe for navigation, with the understanding that remaining in these areas is forbidden, while passage remains free.

Selat Madura.—Selat Madura is used for naval exercises. Vessels are required to navigate within the below-mentioned limits:

1. On the S side N of a line between a position 20 miles NW of Karang Mas Light (7˚41'S., 114˚26'E.) and Outer Buoy (7˚24'S., 113˚00'E.).
2. On the N side S of a line between 5.5 miles SW of Sapudi Light (7˚05'S., 114˚17'E.) to a position 23 miles due W, then to Manila Rock Light (7˚22'S., 113˚10'E.), and then to Tanjung Batupitah, 9 miles N of Manila Rock.

Vessels navigating the NE coast of Java or S coast of Madura should keep a lookout for naval vessels displaying International Code flag signals.

Cilacap.—The area between the meridians of 109˚01'E, 109˚10'E, the parallel 7˚46'42"S, the N Java coast, and the coast of Nusa Kambangan is subject to the following signals:

1. By day—A red flag upon Tjimiring Hill on Nusa Kambangan and on the end of the boat wharf at Sentolo Kawat.
2. By night—An all round red light at each of the above positions.

Teluk Balikpapan.—The area between the parallels 1˚13'30"S, 1˚23'24"S, the meridian 116˚52'06"E, and the Borneo coast is subject to the following signals:

1. By day—A red flag on the post on Tokong Hill.
2. By night—An all round red light at the above position.

Tarakan (North Side).—The area between the parallels 3˚23'N, 3˚33'N, the meridians 117˚25'E, 117˚35'E, and the coasts of the enclosed and neighboring islands is subject to the following signals:

1. By day—A red flag on the hill near Tandjung Djuata.
2. By night—An all round red light on the above position.

Tarakan (South Side).—The area between the parallels 3˚07'30"N, 3˚21'24"N, the meridians 117˚29'00"E, 117˚41'54"E, and the coasts of the enclosed and adjacent islands, is subject to the following signals:

1. By day—A red flag on the high light beacon on the coastal reef of Menulun.
2. By night—An all around red light at the above position.

Ships which are in, or which enter, the danger area must follow any directions given by patrol vessels or aircraft. Any craft carrying a target will bear the signals as a patrol vessel.

Rocket Firing and Bombing Practice Areas.—The area bordered by the straight lines connecting the following points will be used by the Indonesian Navy for rocket firing and bombing practices:

a. 7˚05'00"S, 112˚42'40"E.
b. 7˚05'00"S, 112˚40'25"E.
c. 7˚03'04"S, 112˚40'25"E.
d. 6˚58'50"S, 112˚43'20"E.
e. 6˚58'50"S, 112˚46'25"E.
f. 7˚05'00"S, 112˚42'40"E.

This area has been declared as a dangerous area since it will constantly be used as a training area and the rocket firing and bombing will be done without any advance notice as to when the practices will be held.

All vessels plying in this area are hereby warned to exercise due caution.

Buru Island.—The area enclosed by the following positions is used for firing practice by the Indonesian Air Force:

a. 2˚52'S, 125˚50'E.
b. 3˚56'S, 125˚50'E.
c. 3˚56'S, 127˚28'E.
d. 2˚52'S, 127˚28'E.

West Kalimantan.—The area between the coast and a parallel line 12 miles offshore, between the following points, is used for firing practice by the Indonesian Air Force:

a. 0˚00'N, 108˚57'E.
b. 2˚17'N, 109˚38'E.

Malang.—Air to air and air to surface firing in the area inland and along the S coast of Java between:

a. 8˚30'S, 113˚38'E.
b. 8˚30'S, 112˚15'E.
c. 8˚20'S, 112˚15'E.

Firing practice areas are often announced in Notice to Mariners.

Government

Flag of Indonesia

Indonesia is a republic. The country is divided into 27 provinces, two special regions, and one special capital city district.

Indonesia is governed by a President chosen by the People's Consultative Assembly to serve a 5-year term. The People's Consultative Assembly, which consists of the members of the House of People's Representatives plus 195 government appointees, meets every 5 years to choose the President.

The unicameral House of People's Representatives consists of 500 members; 462 members are directly elected, while the remaining members are appointed from the armed forces. All members serve 5-year terms.

The legal system is based on Roman/Dutch law and is substantially modified by indigenous concepts.

The capital is Jakarta.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Sunday	Variable
Nyepi Saka	Variable
Ascension Day	Variable
Waisak	Variable
August 17	Independence Day
December 25	Christmas Day
December 31	New Year's Eve

Islamic holidays, which are subject to the appearance of the moon, include the Ascension of the Prophet (Isra Mi'raj), Eid Al-Fitter (End of Ramadan), Eid Al-Adha (End of Pilgrimage), Hijrah (Islamic New Year), and the Prophet's Birthday.

Industries

The principal industries include petroleum and natural gas production, textiles, shipyards, chemical factories, automobiles, cement, fertilizers, livestock raising, timber, mining, fishing, and tourism.

The main agricultural crops include rice, maize, sweet potatoes, copra, sugarcane, rubber, palm oil, tea, coffee, fruits, nuts, tobacco, and cloves.

Languages

Bahasa Indonesia (a modified form of Malay) is the official language. English, Dutch, and several local dialects, the most common of which is Javanese, are also used.

Mined Areas

The Indonesian Government has declared the following areas dangerous due to mines which were laid during World War II. Due to the lapse of time, navigation through these minefields whether they have been swept or not is now considered no more dangerous from mines than from any other of the usual hazards to navigation; but in the unswept areas a real danger still exists with regard to anchoring, fishing or any form of submarine or seabed activity.

Sumatera—East Coast—Pulau Lingga

1. The area of water bounded on the N side by the S coast of Pulau Lingga, on the E side by 104˚48'E, on the S side by 0˚29'S, and on the W side by the NE coast of Pulau Singkep and 104˚32'E.
2. A swept channel S of Pulau Lingga, clear for all types of vessels, is bounded as follows:
   a. On the N side by a line joining the following positions:
      - 0˚20'06"S, 104˚32'00"E.
      - 0˚23'06"S, 104˚48'00"E.
   b. On the S side by a line joining the following positions:
      - 0˚21'30"S, 104˚32'00"E.
      - 0˚22'00"S, 104˚35'00"E.
      - 0˚23'18"S, 104˚39'48"E.
      - 0˚24'54"S, 104˚48'00"E
3. A recommended track near Selat Berhala lying between 0˚54'00"S, 104˚18'00"E and 0˚54'00"S, 104˚35'00"E.

Sumatera—East Coast—Sungai Banyuasin

1. The river is dangerous between the parallels of 2˚20'00"S, and 2˚23'30"S.
2. A channel 1 mile wide has been swept along the fairway of the river. The W limit passes through:
   a. 2˚20'00"S, 104˚49'09"E.

b. 2˚23'30"S, 104˚45'00"E.

3. A channel 300m wide has been swept with the centerline joining the following positions:

a. 500m bearing 270˚ from 2˚23'30"S, 104˚45'00"E.
b. 2,000m bearing 360˚ from position a.
c. 3,300m bearing300˚ from position b.

The upper reaches of Sungai Banyuasin and Sungai Lalang, which enters Sungai Banyuasin N of Tanjung Serah, are clear for all types of surface vessels.

Sumatera—East Coast—Sungai Palembang

Although Sungai Palembang has not been swept, it has been navigated so frequently that danger from mines for all vessels may be considered negligible. The following directions should, however, be followed:

1. When making the entrance, vessels should keep to the leading lines, taking care not to be W of the inner leads N of 2˚17'12"S.

2. Vessels should keep to the E side of the river between latitudes 2˚34'00"S, and 2˚35'13"S.

Vessels should also keep to the E side of the river abreast Upang (2˚43'30"S., 104˚57'30"E.), a village.

Sungai Telang (2˚22'S., 104˚54'E.) is considered free of mines.

Sumatera—East Coast—Pulau Segama

The area within a circle of radius 3 miles centered on position 5˚12'S, 106˚04'E is dangerous.

The Java Sea and Selat Sunda

Throughout the area a risidual risk exists from mines broken from their moorings.

Java—South Coast—Alur Pelayaran Cilacap

A danger area is bounded by lines joining the following positions:

a. The S coast of Jawa at 109˚02'30"E.
b. 7˚44'30'S, 109˚02'30"E.
c. 7˚44'30'S, 109˚04'51"E.
d. The S coast of Jawa at 109˚02'30"E.

The area bounded by lines joining the following positions has been swept:

a. 7˚44'30'S, 109˚02'30"E.
b. 7˚47'00'S, 109˚02'30"E.
c. 7˚47'00'S, 109˚04'51"E.
d. 7˚44'30'S, 109˚04'51"E.

Java—North Coast—Tanjung Awarawar

The area bounded by the land and lines joining the following positions are dangerous:

1. West limits of the danger area—

a. the N coast of Java at 111˚28'51"E.
b. 6˚34'00"S, 111˚28'51"E.
c. 6˚39'00"S, 111˚54'00"E.
d. 6˚46'00"S, 111˚54'00"E.
e. 6˚46'00"S, 111˚52 30"E.
f. then S to the coast.

2. East limits of the danger area—

a. the N coast of Java at 111˚55'00"E.
b. 6˚46'00"S, 111˚55' 00"E.
c. 6˚46'00"S, 111˚54'30"E.
d. 6˚39'00"S, 111˚54'30"E.
e. 6˚39'30"S, 111˚59'51"E.
f. then S to the 20m contour.
g. along the 20m contour to 112˚01'51"E.
h. then S to the 5m contour in 112˚01'51"E.
i. along the 5m contour to 112˚06'21"E.
j. then N to the 20m contour in 112˚06'21"E.
k. along the 20m contour to 112˚07'51"E.
l. 6˚41'00"S, 112˚07'51"E.
m. 6˚45'00"S, 112˚29'51"E.
n. 6˚45'00"S, 112˚34'00"E.
o. 6˚47'20"S, 112˚34'00"E.
p. 6˚47'20"S, 112˚30'10"E.
q. 6˚51'10"S, 112˚34'00"E.
r. the N coast of Jawa at 112˚34'00"E.

Between the W limits and the E limits, a channel 0.5 mile wide, which has been cleared of mines, leads to the harbor at Pereng (6˚47'S., 111˚54'E.).

A narrow passage close E of point m above leading S to the shore and ranging from 1.25 mide wide at its seaward end to0.5 mile wide at the shore has been swept clear of mines. A narrow passage, 0.3 mile wide and exteding S to the shore from the storage tanker Cilicap (6˚40'S., 112'E.), has been cleared of mines.

An area swept free of mines is bounded by lines joining the following positions:

a. 6˚52'10"S, 112˚15'48"E.
b. 6˚52'09"S, 112˚15'54"E.
c. 6˚52'36"S, 112˚16'03"E.
d. 6˚52'38"S, 112˚15'58"E.

Within the E limits, the area bounded by lines joining the following positions has been swept clear of mines:

a. 6˚46'04.0"N, 111˚56'16.5"E.
b. 6˚45'48.0"N, 111˚55'32.5"E.
c. 6˚39'00.0"N, 111˚55'32.5"E.
d. 6˚39'05.0"N, 111˚56'03.0"E.
e. 6˚42'08.5"N, 111˚56'03.0"E.
f. 6˚42'08.5"N, 111˚58'03.0"E.
g. 6˚39'05.0"N, 111˚58'03.0"E.
h. 6˚39'05.0"N, 111˚58'19.0"E.
i. 6˚44'18.7"N, 111˚58'19.0"E.
j. 6˚45'20.7"N, 111˚57'20.4"E.
k. 6˚45'20.7"N, 111˚57'50.0"E.
l. 6˚45'48.0"N, 111˚57'50.0"E.
m. 6˚45'48.0"N, 111˚57'05.0"E.

Java—North Coast—Pulau-pulau Karimunjawa

The area within a circle of radius 15 miles centered on position 5˚37'00"S, 110˚54'00"E is dangerous.

Java—North approaches to Surabaya

1. The danger area on the W side of the approach is bounded by lines joining the following positions:

a. 6˚53'21"S, 112˚34'00"E.
b. 6˚53'21"S, 112˚43'58"E.
c. 6˚45'00"S, 112˚43'45"E.
d. 6˚45'00"S, 112˚43'57"E.
e. 6˚46'00"S, 112˚43'57"E.
f. 6˚46'00"S, 112˚44'09"E.
g. the intersection of the W side of the entrance channel with 112˚44'09"E.

h. the W side of the entrance channel to 112˚42'45"E.
i. south along 112˚42'45"E to the N coast of Java.

2. The danger area on the E side of the approach is bounded by lines joining the following positions:
a. the N coast of Pulau Madura at 113˚00'00"E.
b. 6˚52'40"S, 113˚00'00"E.
c. 6˚52'40"S, 112˚45'03"E.
d. 6˚53'00"S, 112˚45'03"E.
e. the intersection of the E side of the entrance channel with 6˚53'S.
f. the E side of the entrance channel to 112˚42'45"E.
g. 7˚11'15"S, 112˚42'45"E.
h. 7˚11'24"S, 112˚43'00"E.
i. N along 112˚42'45"E to the S coast of Pulau Madura.

3. The centerline of a swept channel lies between lines joining the following positions:
a. 6˚51'30"S, 112˚43'02"E.
b. 7˚06'00"S, 112˚39'00"E.
c. 7˚11'25"S, 112˚42'40"E.

The width of the swept channel between point 3a and point 3b is 1.5 miles. The width of the swept channel between point 3b and point 3c is 278m.

4. A swept area in the vicinity of the wreck of the Belantic (6˚53'43"S., 112˚43'55"E.) is bounded by lines joining the following positions:
a. 6˚53'31"S, 112˚43'55"E.
b. 6˚53'31"S, 112˚43'45"E.
c. 6˚54'14"S, 112˚43'26"E.
d. 6˚54'12"S, 112˚43'41"E.

5. The harbor of Surabaya is clear between 112˚43'E and 112˚46'E.

6. A swept area safe for surface navigation is bounded by lines joining the following positions:
a. 7˚09'04"S, 112˚39'45"E.
b. 7˚09'32"S, 112˚39'59"E.
c. 7˚10'27"S, 112˚40'32"E.
d. 7˚10'27"S, 112˚40'42"E.
e. 7˚09'32"S, 112˚40'17"E.
f. 7˚09'02"S, 112˚40'04"E.

Java—East approaches to Surabaya

1. The danger area is bounded on the N by the coast of Pulau Madura, on the W by 112˚46'00"E, and on the E and S by lines joining the following positions:
a. the S coast of Java in 7˚20'00"S.
b. 7˚20'00"S, 112˚54'20"E.
c. 7˚21'00"S, 112˚55'20"E.
d. 7˚31'00"S, 112˚55'20"E.
e. 7˚31'00"S, 112˚57'21"E.
f. 7˚23'10"S, 113˚00'21"E.
g. 7˚16'00"S, 113˚08'21"E.
h. the coast of Pulau Madera in 113˚08'21"E.

2. A swept area is bounded by lines joining the following positions:
a. 7˚11'15"S, 112˚48'25"E.
b. 7˚13'33"S, 112˚51'20"E.
c. 7˚23'50"S, 113˚01'20"E.
d. 7˚23'50"S, 112˚57'10"E.
e. 7˚19'20"S, 112˚53'00"E.
f. 7˚13'58"S, 112˚48'00"E.

3. A swept area is bounded by lines joining the following positions:
a. 7˚18'12"S, 113˚03'00"E.
b. 7˚18'12"S, 113˚03'08"E.
c. 7˚18'20"S, 113˚03'08"E.
d. 7˚18'20"S, 113˚03'00"E.
e. 7˚19'35"S, 113˚04'16"E.
f. 7˚19'31"S, 113˚04'20"E.

4. A swept area is bounded by lines joining the following positions:
a. 7˚16'54"S, 113˚02'29"E.
b. 7˚16'54"S, 113˚03'43"E.
c. 7˚18'48"S, 113˚03'43"E.
d. 7˚18'48"S, 113˚02'30"E.

Jawa—East coast of Pulau Madura

1. The W danger area is bounded by lines joining the following positions:
a. 7˚00'00"S, 113˚59'51"E.
b. 7˚08'00"S, 113˚59'51"E.
c. 7˚10'00"S, 114˚04'51"E.
d. 7˚10'00"S, 114˚12'51"E.
e. 7˚00'00"S, 114˚29'51"E.

2. The E danger area is bounded by lines joining the following positions:
a. 7˚00'00"S, 114˚25'33"E.
b. 7˚07'00"S, 114˚27'33"E.
c. 7˚10'00"S, 114˚26'51"E.
d. 7˚10'00"S, 114˚29'51"E.
e. 7˚00'00"S, 114˚29'51"E.

3. The waters either side of Pulau Sapudi between these two areas are clear.

Pulau Sumbawa—Teluk Bima

Teluk Bima is open to unrestricted surface navigation. Anchoring in the bay is dangerous between 8˚25'00"S and 8˚26'30"S.

Pulau Sumba—Waingapu

1. The danger area lies S of 9˚37'00"S and W of 120˚16'51"E.

2. The swept channel into Waingapu lies on the line of the range beacons between 9˚36'S and 9˚38'S. The channel is 540m wide.

3. Safe anchorage exists in Teluk Waingapu S of 9˚38'S.

Kalimantan—Tanjuns Selatan

The danger area is bounded by lines joining the following positions:
a. 4˚10'00"S, 114˚35'51"E.
b. 4˚10'00"S, 114˚44'51"E.
c. 4˚22'00"S, 114˚44'51"E.
d. 4˚22'00"S, 114˚35'51"E.

Kalimantan—South of Pulau Laut

The danger area is bounded by lines joining the following positions:
a. 4˚03'00"S, 115˚57'51"E.
b. 4˚03'00"S, 116˚13'51"E.
c. 4˚21'00"S, 116˚13'51"E.
d. 4˚21'00"S, 115˚57'51"E.

Kalimantan—Southern entrance to Pulau Laut

The danger area lies N of 3˚48'00"S and is bounded on the W by 115˚5'51"E and on the E by 116˚01'51"E.

Kalimantan—Northern entrance to Pulau Laut

1. The danger area is bounded by lines joining the following positions:
   a. 3˚03'00"S, 116˚06'51"E.
   b. 3˚03'00"S, 116˚21'51"E.
   c. 3˚19'00"S, 116˚21'51"E.
   d. 3˚19'00"S, 116˚06'51"E.
2. The swept channel for the N entrance lies between the following positions:
   a. 3˚10'54"S, 116˚24'51"E.
   b. 3˚12'47"S, 116˚18'24"E.
   c. 3˚11'30"S, 116˚16'12"E.
   d. 3˚11'36"S, 116˚15'06"E.
   e. 3˚15'00"S, 116˚11'16"E.
   f. 3˚16'50"S, 116˚08'42"E.
   g. 3˚17'22"S, 116˚06'20"E.
   h. 3˚20'04"S, 116˚05'50"E.
   i. 3˚25'45"S, 116˚02'16"E.
   j. 3˚26'18"S, 116˚02'24"E.
   k. 3˚26'09"S, 116˚01'59"E.
   l. 3˚26'36"S, 116˚02'12"E.
   m. 3˚28'32"S, 116˚00'48"E.
   n. 3˚26'39"S, 116˚00'14"E.
   o. 3˚25'34"S, 116˚00'29"E.

   The width of the swept channel is, as follows:
   a. Between point 2a and point 2b—1,800m.
   b. Between point 2b and point 2f—1,200m.
   c. Between point 2f and point 2i—270m.
   d. Between point 2i and point 2m—135m.
   e. Between point 2m and point 20—270m.
3. The area immediately around the North Pulau Laut Coal Terminal and adjacent approach areas is clear of mines.
4. An area enclosing the SE approach channel has been swept between the following positions:
   a. 3˚13'18"S, 116˚19'06"E.
   b. 3˚13'12"S, 116˚18'24"E.
   c. 3˚13'12"S, 116˚17'36"E.
   d. 3˚13'54"S, 116˚17'36"E.
5. A 500m-wide swept channel, in the N approaches to Selat Laut lies with its centerline between the following positions:
   a. 3˚02'54"S, 116˚17'33"E.
   b. 3˚03'20"S, 116˚18'36"E.
   c. 3˚08'48"S, 116˚17'36"E.
   d. 3˚11'15"S, 116˚15'54"E.

Kalimantan—East of Pulau Laut

The danger area is bounded by lines joining the following positions:
   a. 3˚18'00"S, 116˚22'51"E.
   b. 3˚18'00"S, 116˚40'51"E.
   c. 3˚39'00"S, 116˚40'51"E.
   d. 3˚39'00"S, 116˚22'51"E.

Kalimantan—Teluk Pamukan

The danger area lies within a circle, with a radius of 1.5 miles centered on position 2˚35'25"S, 116˚32'35"E.

Kalimantan—Balikpapan

1. A danger area to the W is bounded by the coast and lines joining the following positions:
   a. 1˚15'20"S, 116˚46'53"E.
   b. 1˚17'35"S, 116˚46'57"E.
   c. 1˚17'50"S, 116˚47'19"E.
   d. 1˚18'35"S, 116˚47'40"E.
   e. 1˚19'40"S, 116˚48'40"E.
   f. 1˚23'50"S, 116˚45'40"E.
   g. 1˚24'50"S, 116˚46'00"E.
   h. then on a line bearing 355˚ to the coast.
2. A danger area to the W is bounded by the coast and lines joining the following positions:
   a. 1˚15'10"S, 116˚55'55"E.
   b. 1˚19'15"S, 116˚55'55"E.
   c. 1˚19'18"S, 116˚54'38"E.
   d. 1˚19'35"S, 116˚52'42"E.
   e. 1˚19'30"S, 116˚49'50"E.
   f. 1˚18'20"S, 116˚48'50"E.
   g. 1˚18'00"S, 116˚48'38"E.
   h. 1˚17'25"S, 116˚49'15"E.
   i. then along the arc of a circle, with a radiius of 2,040m, centered on position 1˚16'18"S, 116˚49'15"E to
   j. 1˚16'30"S, 116˚48'10"E.
   k. 1˚16'25"S, 116˚48'22"E.
3. A danger area lies within a circle, with a radius of 1 mile centered on position 1˚19'05"S, 116˚57'22"E.
4. The swept channel into Teluk Balikpapan lies between the W danger area and the E danger area described in paragraph 1 and paragraph 2 above and is clear for all types of vessels.
5. Vessels should not approach within 55m of wrecks charted in the swept areas due to the possiblity of unswept mines.

Kalimantan—Tarakan

1. The danger area is bounded by lines joining the following positions:
   a. 3˚15'S, 117˚30'E.
   b. 3˚15'S, 117˚50'E.
   c. 3˚30'S, 117˚50'E.
   d. 3˚30'S, 117˚30'E.
2. A swept anchorage area is defined by lines joining the following positions given as ranges and bearings from the root of the Commercial Pier (3˚17'07"S., 117˚35'46"E.):
   a. 319˚—0.71 mile.
   b. 299.5˚—4.50 miles.
   c. 288˚—4.87 miles.
   d. 196.5˚—0.98 mile.
   e. 105˚—0.93 mile.
3. The swept channel to the anchorage area is defined by the following bearings and distances from the rear range light (3˚13'54"S., 117˚36'36"E.):
   a. 327˚—1.15 miles.
   b. 339˚—2.71 miles.

   These positions define the E edge of the swept channel, which has a width of 278m.
4. A 500m-wide swept channel leads into Muara Sabawang, with its centerline joined by the following positions:
   a. 3˚26'10"S, 117˚50'00"E.
   b. 3˚26'10"S, 117˚43'00"E.

c. 3˚30'00"S, 117˚39'20"E.

5. A swept area S of Pulau Bunyu is defined by lines joining the folliwng positions given as ranges and bearings from the root of the pier (3˚27'58"S., 117˚49'49"E.):

a. 170.5˚—1.15 miles.
b. 183˚—0.98 mile.
c. 238.5˚—0.66 mile.
d. 266˚—0.98 mile.
e. 271.5˚—1.45 miles.
f. 267.5˚—1.53 miles.
g. 277˚—1.97 miles.
h. 284˚—1.87 miles.
i. 294.5˚—2.24 miles.
j. 295.5˚—2.79 miles.
k. 294.5˚—3.28 miles.
l. 292˚—3.31 miles.
m. 295.5˚—4.76 miles.
n. 293˚—5.19 miles.
o. 289˚—3.61 miles.
p. 174˚—1.48 miles.

Sulawesi—Teluk Parepare

Danger Area No. 1 is defined as follows:

1. West of a line joining Tanjung Lero with the cape situated E of Barialai, then to
2. The W edge of Batu Tete, then to
3. The cape situated 0.3 mile N of Batu Tete.

Danger Area No. 2 is defined as follows:

1. Bounded on the E by the coast.
2. Bounded on the S by the parallel of the S extremity of Taka Tallange.
3. Bounded on the W by a line joining the W extremity of Taka Tallage and the E point of Batu Laubang.
4. Bounded on the N by the parallel of Batu Laubang Beacon.

Sulawesi—North channel to Makassar

1. Danger Area No. 1 is bounded by lines joining the following positions:

a. 5˚11'00"S, 119˚01'51"E.
b. 4˚52'00"S, 119˚01'51"E.
c. 4˚52'00"S, 119˚21'12"E.
d. 4˚52'15"S, 119˚21'59"E.
e. 4˚52'48"S, 119˚22'10"E.
f. 4˚59'25"S, 119˚20'09"E.
g. 5˚00'30"S, 119˚19'45"E.
h. 5˚00'30"S, 119˚19'49"E.
i. 5˚03'51"S, 119˚19'49"E.
j. 5˚06'59"S, 119˚21'20"E.
k. 5˚06'59"S, 119˚15'44"E.
l. 5˚11'00"S, 119˚11'40"E.

2. Danger Area No. 2 is bounded by lines joining the following positions:

a. 5˚06'53"S, 119˚24'25"E.
b. 5˚06'56"S, 119˚23'35"E.
c. 5˚07'03"S, 119˚22'32"E.
d. 5˚03'30"S, 119˚20'40"E.
e. 5˚01'00"S, 119˚20'42"E.
f. 4˚59'51"S, 119˚20'50"E.
g. 5˚00'00"S, 119˚21'00"E.
h. 4˚52'27"S, 119˚22'42"E.
i. 4˚52'46"S, 119˚23'38"E.
j. 4˚52'00"S, 119˚25'02"E.
k. 4˚52'00"S, 119˚26'51"E.
l. then S to the coast.

3. A swept channel leads S between Danger Area No. 1 and Danger Area No. 2.

Sulawesi—West channel to Makassar

1. The danger area is bounded by lines joining the following positions:

a. 5˚08'04"S, 119˚24'08"E.
b. 5˚08'07"S, 119˚23'25"E.
c. 5˚07'19"S, 119˚23'13"E.
d. 5˚08'04"S, 119˚23'01"E.
e. 5˚08'29"S, 119˚22'55"E.
f. 5˚08'30"S, 119˚21'34"E.
g. 5˚07'32"S, 119˚21'34"E.
h. 5˚07'28"S, 119˚19'30"E.
i. 5˚10'50"S, 119˚16'26"E.
j. 5˚11'00"S, 119˚15'40"E.
k. 5˚11'42"S, 119˚11'48"E.
l. 5˚11'00"S, 119˚12'55"E.
m. 5˚10'30"S, 119˚13'40"E.
n. 5˚10'00"S, 119˚15'42"E.
o. 5˚07'30"S, 119˚18'09"E.
p. 5˚07'27"S, 119˚15'55"E.
q. 5˚11'00"S, 119˚12'21"E.
r. 5˚11'46"S, 119˚11'40"E.
s. 5˚12'02"S, 119˚09'51"E.
t. 5˚31'00"S, 119˚09'51"E.
u. 5˚42'12"S, 119˚14'51"E.
v. 5˚42'12"S, 119˚40'41"E.

2. A 300m-wide swept channel leads E to the coast at position 5˚24'00"S, 120˚21'00"E. The centerline is joined by the following positions:

a. 5˚19'31"S, 119˚10'00"E.
b. 5˚22'54"S, 119˚19'00"E.
c. 5˚23'03"S, 119˚19'29"E.
d. 5˚23'07"S, 119˚19'52"E.
e. 5˚23'39"S, 119˚21'32"E.
f. 5˚23'44"S, 119˚19'30"E.
g. 5˚20'58"S, 119˚10'00"E.

Sulawesi—Jeneponto

The danger area is bounded, as follows:

1. The parallel of 5˚49'00"S.
2. The S coast of Sulawesi.
3. The meridian of 119˚41'51"E.
4. The meridian of 119˚45'51"E.

Sulawesi—Selat Tioro

A danger area is bounded, as follows:

1. The parallel of 4˚42'00"S.
2. The S coast of Sulawesi.
3. The meridian of 122˚10'51"E.
4. The meridian of 122˚22'51"E.

Another danger area is bounded by lines joining the following positions:

a. 4˚29'00"S, 122˚36'51"E.
b. 4˚29'00"S, 122˚47'51"E.
c. 4˚39'00"S, 122˚47'51"E.

d. 4˚39'00"S, 122˚36'51"E.

Sulawesi—Alur Pelayaran Buton

A danger area is bounded, as follows:

1. The parallel of 5˚21'51"S.
2. The parallel of 5˚26'35"S.
3. The meridian of 122˚33'51"E.
4. The coast of Pulau Muna to the W.
5. The coast ofPulau Buton to the E.

A 0.5-mile wide swept channel has its centerline joining the following positions:

a. 5˚26'35"N, 122˚36'13"E.
b. 5˚23'51"N, 122˚37'07"E.
c. 5˚21'52"N, 122˚38'23"E.

Sulawesi—Selat Wowoni

The danger area is bounded by lines joining the following positions:

a. 4˚03'N, 122˚51'E.
b. 4˚03'N, 122˚58'E.
c. 4˚13'N, 122˚58'E.
d. 4˚13'N, 122˚51'E.

Sulawesi—Teluk Kendari

1. A danger area is bounded by the coast and by lines joining the following positions:
   a. The E coast of Sulawesi at 3˚55'00"S.
   b. 3˚55'00"S, 122˚40'57"E.
   c. 3˚55'18"S, 122˚40'57"E.
   d. 3˚58'18"S, 122˚44'00"E.
   e. 4˚03'00"S, 122˚44'00"E.
   f. The E coast of Sulawesi at 4˚03'00"S.

2. A swept channel has been established, with its centerline joining the following positions:
   a. 3˚58'03"S, 122˚40'57"E.
   b. 3˚58'30"S, 122˚37'35"E.
   c. 3˚58'20"S, 122˚36'35"E.

   The width of the channel is, as follows:
   a. Between point 2a and 2b—900m.
   b. Between point 2b and point 2c—540m.

3. A swept anchorage in Teluk Kendari is bounded by the meridians of 122˚34'20"E and 122˚36'33"E. The area W of this anchorage is not safe for anchoring.

Sulawesi—Kotabuna

The danger area lies within an area lying between a line leading 130˚ from the flagstaff (0˚48.2'N, 124˚39.6'E) for a distance of 2 miles, then SE to the SE extremity of Pulau Bambayanon (0˚46.0'N, 124˚39.0'E), and then NW to the coast. The roadstead NNW and N of Pulau Kumeke is free of mines.

Sulawesi—Selat Bangka

The danger area is bounded by lines joining the following positions:

a. 1˚53'00"N, 124˚59'51"E.
b. 1˚53'00"N, 125˚10'51"E.
c. 1˚40'00"N, 125˚10'51"E.
d. 1˚40'00"N, 124˚59'51"E.

Sulawesi—Tanjung Dulang

The danger area is bounded by lines joining the following positions:

a. 1˚00'30"N, 123˚15'51"E.
b. 0˚59'20"N, 123˚17'24"E.
c. 0˚56'57"N, 123˚15'41"E.
d. 0˚58'04"N, 123˚14'06"E.

Sulawesi—Pulau Paleleh

The danger area is bounded by lines joining the following positions:

a. 1˚06'05"N, 122˚01'56"E.
b. 1˚04'15"N, 122˚01'16"E.
c. 1˚05'30"N, 121˚58'01"E.
d. 1˚07'20"N, 121˚58'41"E.

Halmahera—Teluk Kau

The area bounded by lines joining the following positions:

a. 1˚07.0'N, 127˚54'E.
b. 1˚20.6'N, 127˚54'E.
c. 1˚20.6'N, 128˚10'E.
d. 1˚07.0'N, 128˚10'E.

Approach channels through this area have been established, as follows:

1. Kau Approach Channel is 0.5 mile wide, with its centerline joining the following positions:
   a. 1˚20.6'N, 128˚02.7'E.
   b. 1˚14.5'N, 128˚01.6'E.

2. Lolobata Approach Channel has its centerline joining the following positions:
   a. 1˚20.6'N, 128˚04.1'E.
   b. 1˚14.0'N, 128˚04.1'E.
   c. 1˚13.6'N, 128˚05.9'E.
   d. 1˚14.4'N, 128˚07.7'E.

   The channel is 0.325 mile wide between point a and point b, and then 0.5 mile wide betweed point b and point d.

3. A 0.5-mile wide channel also connects point 1b above with point 2b above.

Molucca Sea—Mangoli

1. The area on the N coast bounded by lines joining the following positions:
   a. 1˚45.7'N, 125˚34.7'E.
   b. 1˚45.3'N, 125˚34.7'E.
   c. 1˚44.7'N, 125˚30.3'E.
   d. 1˚47.7'N, 125˚30.2'E.

2. Teluk Vesuvius, on the S coast—the area N of 1˚54'S and 125˚21'E.

Seram—Selat Seram

The area bounded by lines joining the following positions:

a. 3˚29'N, 128˚18'E.
b. 3˚20'N, 128˚20'E.
c. 3˚27'N, 128˚28'E.
d. 3˚31'N, 128˚30'E.

Seram—Selat Kilwaru

The area bounded by lines joining the following positions:

a. 3˚51.0'N, 130˚54.5'E.
b. 3˚51.0'N, 130˚54.0'E.
c. 3˚53.1'N, 130˚53.0'E.

d. 3˚55.5'N, 130˚53.0'E.
e. 3˚55.5'N, 130˚54.5'E.

Irian Jaya

Within Kamrau Bay, the area bounded by the parallels of 3˚38'S and 3˚40'S, between the meridian of 133˚38'E, and the coast N of Tanjung Simora is dangerous.

Navigational Information

Enroute Volumes

Pub. 163, Sailing Directions (Enroute) Borneo, Jawa, Sulawesi, and Nusa Tenggara.

Pub. 164, Sailing Directions (Enroute) New Guinea.

Pub. 174, Sailing Directions (Enroute) Strait of Malacca and Sumatera.

Maritime Claims

The maritime territorial claims of Indonesia are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.

* Claims archipelagic status. 6Submarines must navigate above water level and show the national flag. Nuclear vessels and vessels carrying nuclear material must carry documents and adhere to international special preventative measures.

Maritime Boundary Disputes

In 1999, a partial maritime boundary between Australia and East Timor was established over part of the Timor Gap, but an unreconciled area where Australia was granted a 90 per cent share of exploited gas reserves has hampered the creation of a maritime boundary with Australia.

Indonesian groups have challenged Australia's claim to Ashmore Reef (12˚15'S., 123˚03'E.).

Indonesia and East Timor contest the sovreignty of the uninhabited coral island of Pulau Batek (Fatu Sinai) (9˚15'S., 123˚59'E.), which has hampered the creation of a maritime boundary.

Indonesia asserts claims to Pulau Sipidan (4˚07'N., 118˚38'E.) and Pulau Ligitan (4˚10'N., 118˚53'E.), located on the E coast of Borneo, which were awarded to Malaysia in 1999 by the International Court of Justice.

Regulations

National Flag

The Indonesian national flag should be flown at sea when in Indonesian waters. It should be flown not lower than any other flag, and it should not be smaller than the ship's national ensign or any other flag displayed.

Archipelagic Sea Lanes

Archipelagic Sea Lanes (ASL), as defined by the United Nations Convention on the Law of the Sea (UNCLOS), have been designated through the Indonesian archipelago. The axis lines of the nine ASLs, which may be seen on the accompanying graphic, are, as follows:

1. **ASL I** (South China Sea-Selat Karimata-Western Java Sea-Selat Sunda-Indian Ocean)
   a. 3˚35'00"N, 108˚51'00"E.
   b. 3˚00'00"N, 108˚10'00"E.
   c. 0˚50'00"N, 106˚16'20"E.
   d. 0˚12'20"S, 106˚44'00"E.
   e. 2˚01'00"S, 108˚27'00"E.
   f. 2˚16'00"S, 109˚19'30"E.
   g. 2˚45'00"S, 109˚33'00"E.
   h. 3˚46'45"S, 109˚33'00"E.
   i. 5˚12'30"S, 106˚54'30"E.
   j. 5˚17'15"S, 106˚44'30"E.
   k. 5˚17'15"S, 106˚27'30"E.
   l. 5˚15'00"S, 106˚12'30"E.
   m. 5˚57'15"S, 105˚46'20"E.
   n. 6˚18'30"S, 105˚33'15"E.
   o. 6˚24'45"S, 104˚41'26"E.

2. **ASL IA** (Northeast of Pulau Bintan)
   a. 1˚52'00"N, 104˚55'00"E.
   b. 0˚50'00"N, 106˚16'20"E.

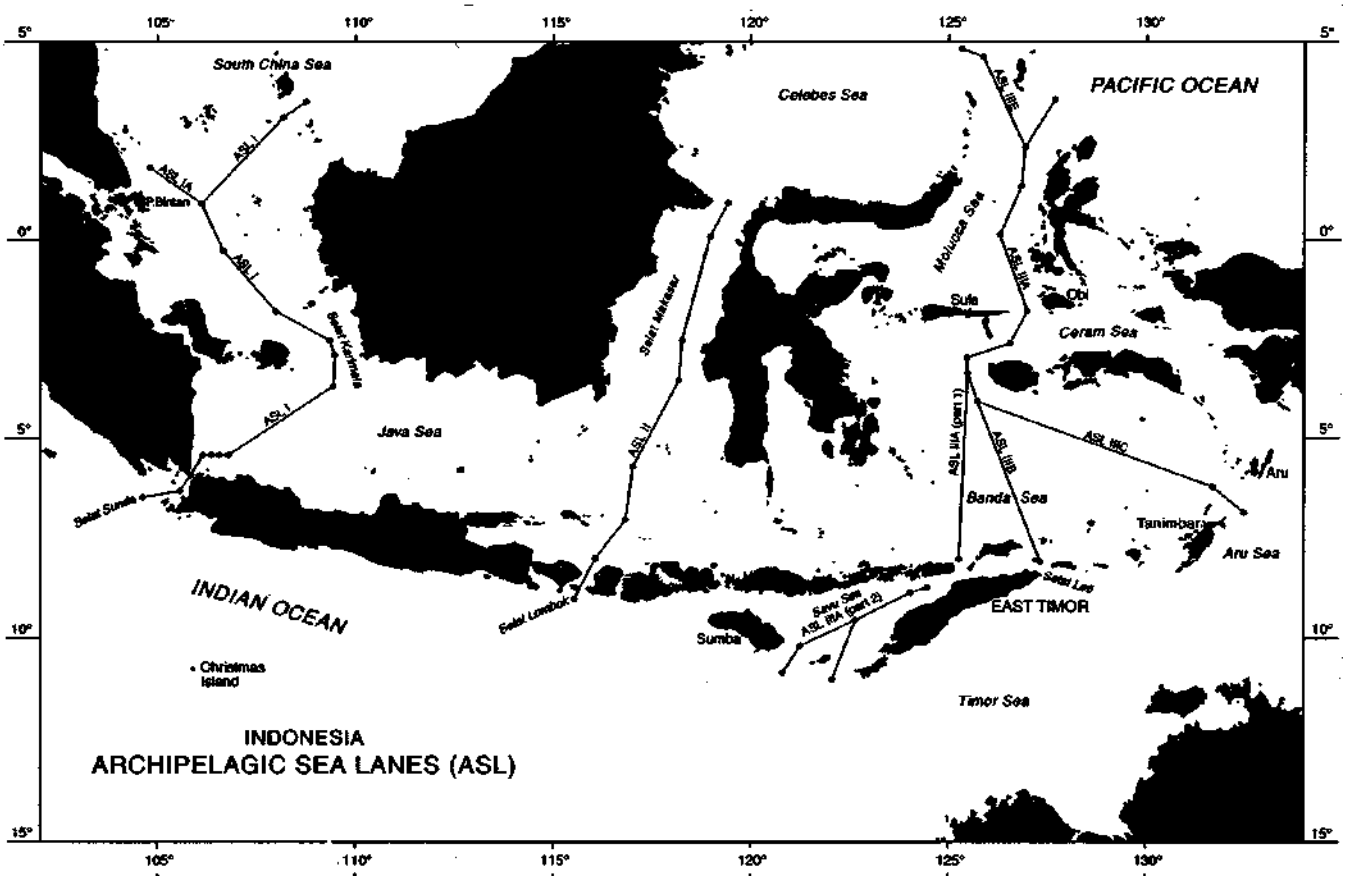
3. **ASL II** (Celebes Sea-Selat Makasar-Selat Lombok-Indian Ocean)
   a. 0˚57'00"N, 119˚33'00"E.
   b. 0˚00'00", 119˚00'00"E.
   c. 2˚40'00"S, 118˚17'00"E.
   d. 3˚45'00"S, 118˚17'00"E.
   e. 5˚28'00"S, 117˚05'00"E.
   f. 7˚00'00"S, 116˚50'00"E.
   g. 8˚00'00"S, 116˚00'00"E.
   h. 9˚01'00"S, 115˚36'00"E.

4. **ASL IIIA-Part 1** (Pacific Ocean-Molucca Sea-Ceram Sea-Banda Sea)
   a. 3˚27'00"N, 127˚40'30"E.
   b. 1˚40'00"N, 126˚57'30"E.
   c. 1˚12'00"N, 126˚54'00"E.
   d. 0˚09'00"N, 126˚20'00"E.
   e. 1˚53'00"S, 127˚02'00"E.
   f. 2˚37'00"S, 126˚30'00"E.
   g. 2˚53'00"S, 125˚30'00"E.
   h. 3˚20'00"S, 125˚30'00"E.
   i. 7˚50'00"S, 125˚21'09"E.

5. **ASL IIIA-Part 2** (Savu Sea-Indian Ocean)
   a. 8˚57'00"S, 123˚50'49"E.
   b. 9˚03'00"S, 123˚34'00"E.
   c. 9˚23'00"S, 122˚55'00"E.
   d. 10˚12'00"S, 121˚18'00"E.
   e. 10˚44'30"S, 120˚45'45"E.

6. **ASL IIIB** (Banda Sea-Selat Leti)
   a. 3˚20'00"S, 125˚30'00"E.
   b. 4˚00'00"S, 125˚40'00"E.
   c. 8˚03'00"S, 127˚21'12"E.

7. **ASL IIIC** (Banda Sea-Aru Sea)
   a. 3˚20'00"S, 125˚30'00"E.



b. 4˚00'00"S, 125˚40'00"E.
c. 6˚10'00"S, 131˚45'00"E.
d. 6˚44'00"S, 132˚35'00"E.

8. **ASL IIID** (Savu Sea-between Sawu and Roti-Indian Ocean)
a. 9˚23'00"S, 122˚55'00"E.
b. 10˚58'00"S, 122˚11'00"E.

9. **ASL IIIE** (Celebes Sea-Molucca Sea)
a. 4˚32'12"N, 125˚10'24"E.
b. 4˚12'06"N, 126˚01'00"E.
c. 1˚40'00"N, 126˚57'30"E.

The use of an ASL is not mandatory. However, vessels electing to make an ASL passage shall not deviate more than 25 miles from the axis line. Where an island borders the ASL, vessels in an ASL Passage may not navigate closer to the coast than 10 per cent of the distance between the nearest point of land and the axis line of the ASL. Vessels may still transit this area in innocent passage. Outside sea lanes or normal routes, vessels must transit archipelagic waters in innocent passage.

Vessel traffic in an ASL is not separated, except within a traffic separation scheme. Where a traffic separation scheme exists, the rules for the use of the traffic separation scheme applies.

It should be noted that the axis lines of the ASL do not mark the deepest water, any route, or any recommended track.

Port Authority

All Indonesian ports are administered by the Port Authority, which coordinates and supervises the activities of the port.

This includes the Harbormaster Service, the Harbor Board, the Customs Service, the Quarantine Service, the Immigration Service, Port Security, and all other port activities.

Harbormaster Service

The harbormaster supervises the safety inspections and the compliance of all shipping regulations, all ships movements within the harbor limits, pilotage, notes of protest, and ship's certificates and documents.

Port Regulations

Vessels coming from any port outside of Indonesia are forbidden to communicate with the shore before obtaining permission from the commander of the guard ship or in case there is no guard ship in the road, from the harbormaster.

Every vessel without a bill of health or with an unsatisfactory bill of health shall be subject to the regulations of quarantine.

Every vessel from a foreign port is to be provided with a bill of health countersigned by the consular officer at the port of departure.

Restricted Areas

Without the permission of the Chief of Staff of the Indonesian Navy, or an official appointed by him for that purpose, navigation or fishing is prohibited in the following territorial waters of Indonesia:

1. The coast of Sumatera from Tanjung Radja (3˚45'N., 96˚30'E.) to Ujung Masam (5˚34.8'N., 95˚13.5'E.) and then along the E and S coasts of Sumatera to Vlakke Hoek (5˚56'S., 104˚35'E.), including the islands nearby these coasts.

Islands excepted are those situated NE of a line drawn from the N part of Lesser Iju Island (1˚11.5'N., 103˚21'E.) to the N coast of Little Karimun Islands toward the W part of Middelburg Rif (0˚51.4'N., 103˚34.1'E.), then to the W part of Pelangkat Island (0˚45'N., 103˚35'E.), then to the E part of Ngal Island (0˚41.5'N., 103˚35.4'E.), to the N part of Durian Valsch (0˚37.5'N., 103˚42'E.), then to the S part of Zuid Broeder (0˚32'N., 103˚46'E.), to the S part of Mutji Island (0˚32.5'S., 104˚01.5'E.), then to the S part of Berhala Island (0˚52'S., 104˚24'E.), and then to Tanjung Djabung (1˚01'S., 104˚22'E.).

2. The coast of Borneo from Tanjung Datu (2˚05'N., 109˚39'E.) to the mouth of the River Djelai (2˚59'S., 110˚43.5'E.).

3. The coast of West Java from Tanjung Lajar (6˚45'S., 105˚13'E.) to the E part of Teluk Penandjung (7˚43'30"S., 108˚40'30"E.) including the waters around Deli and Tindjul islands.

4. The E coast of Java within the following positions:
   a. 7˚12'00"S, 112˚44'00"E.
   b. 7˚15'00"S, 112˚53'00"E.
   c. 7˚05'00"S, 112˚53'00"E.
   d. 7˚05'00"S, 112˚41'00"E.
   e. 7˚10'30"S, 112˚44'00"E.

5. The W, N, E, and S coasts of North Sulawesi, from Sapuringgi (0˚10'S., 110˚48'E.) to Kasimbar (0˚10'S., 120˚04'E.), including the waters of the islands located in the bay of Dondo, Kwandang, Manterawu, Bangka and Lembeh.

6. Ports in these areas may only be visited with a “sailing permit” issued by the Indonesian Navy and in some cases, by the Indonesian Army. Permits are obtained in Jakarta, but may also be issued from Indonesian consulates.

Ships navigating between these restricted areas and foreign countries, or vice versa, must pass inspection points if prior permission to enter has not been obtained.

The following places are listed as inspection points:

1. Sumatera—Teluk Bajur Sibolga, Gunung Sitoli, Meulaboh, and Bengkuluet Pandjang.
2. Java—Jakarta and Cilacap.
3. Sulawesi—Tarakan and Makassar.

Search and Rescue

Baden SAR National (BASARNAS) coordinates search and rescue operations and can be contacted by e-mail, as follows:

barsanas@indo.net.id

A network of coast radio stations maintains a continuous listening watch on international distress frequencies.

Indonesian coast guard stations are located, as follows:

1. Jakarta, Jawa (6˚06'S., 106˚54'E.).
2. Tanjunguban, Bintan (1˚04'N., 104˚13'E.).
3. Tanjungperak, Surabaya (7˚12'S., 112˚44'E.).
4. Bitung, North Sulawesi (1˚26'N., 125˚11'E.).
5. Ambon (3˚42'S., 128˚10'E.).

Signals

Various signals are made in Indonesian ports and waters for the control and assistance of shipping.

Tidal Current Signals.—Tidal current signals are displayed from shore stations, as follows:

1. A white flag—Slack water.
2. A blue flag—Ebb tide.
3. A red flag—Flood tide.

Port Closure Signals.—During maneuvers and exercises, and also for other reasons, it may be necessary to prohibit entrance into channels and harbors of Indonesia or to permit it subject to reservations.

The following signals may be shown from Indonesian signal stations:

1. Emergency entry strictly prohibited:
   a. Day signal.—Three red balls disposed vertically.
   b. Night signal.—Three red lights disposed vertically.
2. Entry prohibited:
   a. Day signal.—A black cone, point up, between two black balls disposed vertically.
   b. Night signal.—A white light between two red lights disposed vertically.
3. Entry and departure prohibited:
   a. Day signal.—Two black cones, points down, over a black ball disposed vertically.
   b. Night signal.—Green light, white light, and red light, disposed vertically.
4. Departure prohibited:
   a. Day signal.—Three black cones, with the top and bottom points down and the middle point up disposed vertically.
   b. Night signal.—A white light between two green lights disposed vertically.

Permission or refusal to enter the channel or harbor will be given after examination. A vessel is then only allowed to enter the channel or harbor provided she is in the charge of a pilot, or is preceded by a warship or pilot vessel.

From the time the signals are shown all exemptions from taking a pilot cease. Masters of vessels are obliged to carry out the instructions of the officer from the examination vessel and are to obey all signals.

When warning of firing is given, work on all vessels near the inspection vessel will be stopped immediately until it is safe, and permission has been given to proceed.

Failure to comply with these regulations may result in danger to the vessel and crew. As a general rule, permission to enter at night will not be granted.

If a signal is made from the shore to intimate that vessels are subject to examination, and if there is no examination vessel in the entrance to the fairway, vessels must anchor or lie off.

The coming into operation of these regulations at any particular fairway or harbor will not be announced beforehand.

Berthing Signals.—The following flag signals that are displayed on shore may be used in the harbors of the Republic of Indonesia in addition to the international signals:

3rd substitute over A	Your berth is No. 1.
3rd substitute over B	Your berth is No. 2.
3rd substitute over C	Your berth is No. 3.
3rd substitute over D	Your berth is No. 4.
3rd substitute over E	Your berth is No. 5.
3rd substitute over F	Your berth is No. 6.
3rd substitute over G	Your berth is No. 7.
3rd substitute over R	Anchor in the anchorage area.
Blue flag	No communication, bad weather.

The following flag signals may be shown from vessels in Indonesian harbors:

1st substitute over R	Ship requires docking.
2nd substitute over M	Please send motor boat.
3rd substitute over J	Water flag.
1st substitute over N	Have passenger(s) who has come directly or indirectly from outside Indonesia.
2nd substitute over V	Request rubbish boat.
3rd substitute over Q	Onboard, or during the voyage, there were one or more cases of contagious disease, or disease thought to be contagious (other than cholera or yellow fever).

Pilot Signals.—Vessels requiring a pilot may make any of the below listed signals to obtain assistance.

The following day signals may be used:

1. The national flag, surrounded by a white border one-fifth the breadth of the flag displayed at the foremast head.
2. The pilot signal "UC" of the International Code of Signals.
3. Flag G of the International Code of Signals.
4. The distant signal consisting of a cone point up, having above it two balls or shapes resembling balls.

The following night signals may be used:

1. A blue light every 15 minutes.
2. A bright white light flashed or exhibited just above the bulwarks at frequent intervals for 1 minute.
3. The letter G in the Morse code made by flashing lamp.

The above signals must be shown until the pilot is on board or until an answering signal has been made.

Vessels arriving at night and not immediately requiring the services of a pilot, should show the pilot signal at daybreak.

The following signals are made from the pilot vessel in answer to ships making the pilot signal:

	Signal	Meaning
By day	No signal.	The pilot will proceed to vessel at once.
By night	White flare or swinging a white light.	
By day	Flag D of International Code of Signals.	No pilot is available; vessel may enter without a pilot until one is met with.
	Cone point up, surmounted by a ball.	
By night	A red light above a white light.	
By day	Cone point up with a ball below it.	No pilot is available; vessel must wait outside until further notice.
By day	Two cones vertically disposed, points down.	No pilot is available for vessels of less than 350 gross tons capacity; these vessels may enter without a pilot.

Submarine Operating Areas

A submarine exercise area in the Java Sea is bounded by lines joining the following positions:

a. 5˚34'S, 106˚15'E.
b. 5˚34'S, 106˚25'E.
c. 5˚49'S, 106˚25'E.
d. 5˚49'S, 106˚15'E.

Submarines exercise in the E part of the Java Sea, especially in the area bounded by lines joining the following positions:

a. 7˚14'S, 114˚20'E.
b. 7˚14'S, 114˚40'E.
c. 7˚24'S, 114˚40'E.
d. 7˚24'S, 114˚20'E.

Time Zone

Indonesia is covered by multiple Time Zones, as follows:

1. Western Zone (Bangka, Belitung, Jawa, Madura, Sumatera, West Kalimantan, and Central Kalimantan)—The Time Zone description is GOLF (-7). Daylight Savings Time is not observed.
2. Central Zone (Bali, Flores, South Kalimantan, East Kalimantan, Lombok, Sulawesi, Sumba, Sumbawa, and West Timor)—The Time Zone description is HOTEL (-8). Daylight Savings Time is not observed.
3. Eastern Zone (Aru, Kai, Moluccas, Tanimbar, and Irian Jaya)—The Time Zone description is INDIA (-9). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at Jalan Merdeka Selatan 4-5, Jakarta.

The mailing addresses are, as follows:

1. Indonesia address—
   Jalan Merdeka Selatan 4-5
   Jakarta, 10110
2. U. S. address—
   Unit 8129, Box 1
   APO AP 96520

U. S. Embassy Indonesia Home Page
http://jakarta.usembassy.gov

JAPAN

General

Japan, located in Eastern Asia, is an island chain between the North Pacific Ocean and the Sea of Japan, E of the Korean Peninsula.

It consists of the four major islands of Hokkaido, Honshu, Shikoku, and Kyushu, and hundreds of smaller islands. It extends from La Perouse Strait in the N through the Ryukyu Islands (Nansei Shoto) just E of Taiwan, and Kazan Retto just N of the Mariana Islands.

Japan is largely mountainous and the limited land suitable for industrial and agricultural use is used intensely.

Terracing of mountain slopes for cultivation is common practice.

The climate is temperate, with warm, humid summers and relatively mild winters except on the island of Hokkaido and the N parts of Honshu facing the Sea of Japan.

The terrain is mostly rugged and mountainous. The mountains are geologically young and the entire country is subject to frequent and sometimes severe earthquakes.

Because of the country's mountainous and insular nature, the coast is very irregular and bays, coves, and inlets are numerous.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Naikai Seto (Inland Sea)

Extreme caution should be used when navigating ships in Naikai Seto. Disasters within Naikai Seto are particularly characterized by a high incidence of groundings and collisions. Many vessels run afoul of each other at places where the main fairways intersect with the fairways used by coasters.

Some of the channels are narrow with strong currents and complicated land formations. Disasters occur in those areas in which vessels pass with great frequency. By type, disasters involving small craft, motor sailers in particular, are in the majority. Disasters are high within such congested ports as Kanmon, Kobe, Komatsushima, Osaka, Tokuyama-Kudamatsu, and Wakayama. Care is needed in certain areas where the

channels are narrow, tidal currents strong, and the traffic is congested.

These areas include the W approaches to and in Kanmon Kaikyo, Tsurishima Kaikyo, Kurushima Kaikyo, Bisan Seto, Akashi Kaikyo, and Tomogashima Suido.

Kyushu

According to statistics compiled by Japanese authorities, groundings are the major cause of marine disasters in the coastal waters of Kyushu. Several areas report frequent marine disasters due to various circumstances.

Within Toi Misaki, capsizing of small vessels are reported; associated with heavy tide rips.

In Sata Misaki and Bono Misaki, groundings of small vessels and small craft are reported; associated with strong ocean and tidal currents.

Within Yatsushiro Wan and Shimabara Kaiwan, groundings and collisions are reported.

Hondono Seto and the approaches to Yatsushiro Ko, Misumi Ko, and Shimabara Ko require caution to navigate.

Within Goto Retto, groundings are reported, with frequent disasters occurring at the N end of the Goto Retto.

In Hirado Seto, groundings and collisions are reported, because it has a route with many course changes and strong tidal currents.

Tsushima reports groundings with frequent disasters occurring because of off-lying islets.

Yobuko Ko reports offshore groundings. The route has many off-lying islets, dangers, and course changes.

Fukuoka Wan reports offshore groundings occurring because of several off-lying islets and dangers.

Within Kurara Seto, groundings and collisions are reported with numerous small vessels operating in the area.

Northwest Coast of Honshu

The NW coast of Honshu has fewer marine accidents than any other area because ship traffic is lighter. Those occurring near this coast during the monsoon season in winter are most serious. It is dangerous to enter the harbors and estuaries facing the coastal sea during the NW monsoon season.

Special caution is required in the vicinity of Tuno Shima, Kyoga Misaki, Noto Hanto, Sado Shima, Oga Hanto, Tsugaru Kaikyo, and large harbors.

South Coast of Honshu

The S coast of Honshu has a very high incidence of marine disaster because ship traffic is increasing. Recently traffic congestion in Uraga Suido, the entrance channel into Tokyo Wan, reached an average of about 700 vessels daily and both strandings and collisions are increasing.

En route to Tokyo Wan, many shipwrecks occur due to obscured vision when rounding the capes of Nojima Saki, Iro Saki, and Omae Saki. Ise Wan and Nagoyo Ko have a high incidence of shipwrecks.

Traffic is very heavy off Shiono Misaki and in the outer part of Kii Suido, resulting in a high incidence of accidents.

East Coast of Honshu

The E coast of Honshu has a high incidence of accidents in winter during snow storms with NW seasonal winds and in summer with dense fog. Many steamers have stranded at the E entrance of Tsugaru Kaikyo.

About half were because of snow storms or dense fog and the rest due to careless navigation in clear weather. Great caution is necessary. Many strandings have also occurred about 20 miles S of Shiriya Saki due to vessels navigating too close inshore during fog without regard for the strong set of the current toward the coast.

Many collisions and strandings occur near Hachinohe Ko in summer, during dense fog, when it is crowded with fishing vessels. Large ships should avoid this area at night during the squid fishing season.

Reclaimed Areas

Because of extensive reclamation in many areas of Japan, certain cartographic features have been created, changed, or, for practical purposes, eliminated. Mariners should remain aware of the likelihood that the character of an observed feature may differ from that which is presented on a chart or described in the sailing directions.

Abnormal Waves

Waves caused by low atmospheric pressures.—According to weather observations at specific points E of Honshu, low atmospheric pressures which generate waves more than 5m high occur, on average every 5 days during the winter months from December to February. These wave heights have been reported to reach a maximum height of 13m.

At some locations S of Honshu, low atmospheric pressure-generated waves equivalent to those occurring E of Honshu, have been observed an average of four times per year. The maximum wave height of 8m usually occurs in March.

Waves generated by typhoons.—Waves in the area of a typhoon are distributed with the highest intensity in the right-rear section of the quadrant and the lowest intensity in the left-fore quadrant, according to the direction of the typhoon. This phenomenon can be interpreted, as follows:

1. The wind velocity in the right semicircle (dangerous semicircle) is higher than that in the left semicircle (navigable semicircle).
2. In the right semicircle, the waves and the typhoon generally advance in the same direction; both the time and distance in which the waves are exposed to the wind in the same direction are longer than those measured in the left semicircle.
3. The waves in the rear semicircle and the rolling swell in the fore semicircle overlap in the rear semicircle, so that they are intensified. The height and distribution of waves in the area of a typhoon largely depend on the velocity of the typhoon. when the typhoon's velocity is high, the waves in the rear semicircle are much higher than those in the fore semicircle. When the typhoon's velocity is nearly equal to that of the waves, the waves gain in force, reaching the rear semicircle at the same time as the typhoon, so that the waves become higher, especially in the dangerous semicircle.

Abnormal waves E of Japan in winter.—Most marine casualties in the area off Nojimasaki involved vessels on passage from ports in North America or South America to ports in Japan. To avoid the danger of taking the great circle route in winter, they travel W at approximately 30˚N. The rectangular water area off Nojimasaki, is commonly known as a

"haunted sea area" and is bounded by lines joining the following positions:

a. 28˚00'N, 135˚00'E.
b. 28˚00'N, 160˚00'E.
c. 40˚00'N, 160˚00'E.
d. 40˚00'N, 135˚00'E.

In this area marine accidents frequently occur; many of the details of these accidents remain unknown. According to investigations, it is considered that natural phenomenon (atmospheric conditions, oceanic weather conditions) and unnatural phenomenon (navigational conditions) are compounded to cause such casualties

Such abnormal waves are large highly impulsive waves, including the chopping waves caused by seasonal winds. The real condition of these waves remains unknown. Regardless, the waves gain in force and spread in more than one direction, causing interference patterns. Consequently, these waves become higher than ordinary waves, sometimes reaching heights of 20m.

Waves in the Sea of Japan.—In the Sea of Japan and along the NW coast of Honshu, large waves frequently occur in winter due to the effects of low atmospheric pressure and NW seasonal winds. The waves heights are over 8m and in extraordinary cases may exceed 10m. On average, low atmospheric pressure passes through this area once per week.

Currency

The official unit of currency is the yen.

Firing Areas

Information about gunnery or bombing exercises and naval operations by the U.S. Navy, the U.S. Air Force, and the Japan Self Defense Force is promulgated in U.S. Notices to Mariners, Japanese Navigational Warnings, NAVAREA XI Navigational Warnings, Regional Maritime Safety (RMS) Headquarters Notices to Mariners, and RMS Headquarters Navigational Warnings.

Unless otherwise noted, these areas are not in permanent use. An advance notice will be given before an area is in use. Unless otherwise noted, entering and fishing are prohibited when a training area is in use.

U. S. Navy Training Areas

1. Area Charlie (SE of Nozima Saki, E coast of Honshu).—Area bounded by a line joining the following positions:

a. 34˚35'12"N, 140˚16'48"E.
b. 34˚08'12"N, 141˚01'48"E.
c. 33˚44'12"N, 140˚22'48"E.
d. 34˚31'12"N, 140˚07'48"E.

This area is a permanent danger area. Vessels entering the area do so at their own risk. Fishing is prohibited but may be permitted at night when no firing training is scheduled.

Firing training may be conducted at any time during the day from 0800 to 1700; an advance notice will be given before night firing training (1700 to 0800) is conducted.

2. Area Foxtrot (S of Goto Retto, W coast of Kyushu).—Area bounded by the following parallels and meridians:

a. 31˚47'12"N.
b. 32˚20'12"N.
c. 128˚45'52"E.
d. 129˚09'52"E.

This area is a permanent danger area and is in use daily from 0800 until 1700. Vessels entering the area do so at their own risk. Fishing is prohibited when the area is in use.

3. Area Golf (N of Goto Retto, W coast of Kyushu).—Area bounded by a line joining the following positions:

a. 33˚35'12"N, 128˚24'52"E.
b. 33˚56'12"N, 128˚55'52"E.
c. 33˚42'12"N, 129˚09'52"E.
d. 33˚21'12"N, 128˚38'52"E.

This area is a permanent danger area. Vessels entering the area do so at their own risk. Fishing is prohibited but may be permitted at night when no firing training is scheduled.

Firing training may be conducted at any time during the day from 0800 to 1700; an advance notice will be given before night firing training (1700 to 0800) is conducted.

4. Area Kilo (E of Katsuura Wan, E coast of Honshu).—Area bounded by the following parallels and meridians:

a. 35˚00'12"N.
b. 35˚15'12"N.
c. 140˚29'48"E.
d. 141˚09'48"E.

This area is temporarily suspended.

5. Area Lima (E of Hyuga Nada, E coast of Kyushu).—Area bounded by a line joining the following positions:

a. 32˚01'43"N, 132˚37'51"E.
b. 32˚09'13"N, 132˚59'51"E.
c. 31˚48'13"N, 132˚59'51"E.
d. 32˚02'13"N, 133˚29'51"E.
e. 31˚42'13"N, 133˚29'51"E.
f. 31˚04'13"N, 132˚07'51"E.
g. 31˚25'13"N, 132˚07'51"E.
h. 31˚38'13"N, 132˚37'51"E.

This area is a permanent danger area. Vessels entering the area do so at their own risk. Fishing is prohibited but may be permitted on Saturday when no firing training is scheduled.

Firing training may be conducted Monday through Friday from 0600 to 1800; an advance notice will be given before Saturday training, from 0600 to 1800, is conducted.

6. Numazu Wet Net Training and Administrative Loading Area (Suruga Wan, S Coast of Honshu).—Area bounded by a line joining the following positions:

a. 35˚06'50.8"N, 138˚48'45.7"E.
b. 35˚03'57.8"N, 138˚49'03.7"E.
c. 35˚05'15.8"N, 138˚45'41.7"E.
d. 35˚06'54.8"N, 138˚48'35.7"E.
e. 35˚06'57.8"N, 138˚48'36.7"E.
f. 35˚06'53.8"N, 138˚48'46.7"E.

7. Sagami Wan Submarine Haven (Sagami Wan, S Coast of Honshu).—Area N of a line joining position 34˚57'12'N,

139˚08'49"E and Joga Shima Light (35˚08.1'N., 139˚36.7'E.).

8. White Beach Area (E of Katsuren Saki, Okinawa Shima, Nansei Shoto.):
a. Area contiguous to the land in an arc with a radius of 2 miles centered at position 26˚17'49.1"N, 127˚5 5'16.2"E, between lines extending 025˚ and 155˚ from the center position.
b. Area within a radius of 5 miles centered at position 26˚20'59.3"N, 128˚08'37.9"E.

9. Kume Shima Range (Nansei Shoto):
Water area.—Area within a radius of 1 mile centered at position 26˚20'56.9"N, 126˚52'22.4"E.
Air space.—Area bounded by a line joining the following positions:
a. 26˚27'13.9"N, 126˚47'53.5"E.
b. 26˚27'14.1"N, 126˚55'53.3"E.
c. 26˚12'14.4"N, 126˚55'53.2"E.
d. 26˚12'14.0"N, 126˚47'53.5"E.
This area is in use Monday to Saturday from 0600 to 2300.

10. Kobi Sho Range (Senkaku Shoto, Nansei Shoto).—Water area contiguous to Kobi Sho (25˚56'N., 123˚41'E.) extending out to a distance of 100m.

11. Sekibi Sho Range (Senkaku Shoto, Nansei Shoto).—Area within a radius of 5 miles centered at position 25˚54'14.4"N, 124˚33'53.9"E.

12. Oki-Daito Shima Range (Nansei Shoto):
a. Area within a radius of 3 miles centered at position 24˚28'15.3"N, 131˚10'52.0"E.
b. Area within a radius of 5 miles centered at position 24˚28'15.3"N, 131˚10'52.0"E.

13. Hotel Hotel (E of Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions:
a. 26˚23'14"N, 128˚19'53"E.
b. 27˚06'14"N, 129˚09'52"E.
c. 27˚06'14"N, 130˚59'52"E.
d. 26˚10'15"N, 130˚59'52"E.
This area is in use daily from 0600 to 2000 and at other times as announced.

14. India India (ESE of Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions:
a. 24˚23'15"N, 130˚47'52"E.
b. 25˚26'15"N, 131˚41'52"E.
c. 25˚13'15"N, 132˚30'52"E.
d. 24˚00'16"N, 132˚59'52"E.
e. 24˚00'15"N, 131˚22'38"E.
f. 24˚07'33"N, 131˚10'25"E.
This area is in use daily from 0600 to 1800.

15. Mike Mike (ESE of Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions:
a. 25˚41'15"N, 128˚51'53"E.
b. 25˚48'37"N, 129˚02'19"E.
c. 25˚44'15"N, 129˚25'52"E.
d. 25˚44'15"N, 130˚10'52"E.
e. 25˚43'24"N, 130˚35'52"E.
f. 25˚41'15"N, 130˚44'52"E.
g. 24˚53'15"N, 130˚03'52"E.
This area is in use daily from 0600 to 1800.

16. Golf Golf (air space) (ESE of Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions:
a. 25˚41'15"N, 130˚44'52"E.
b. 25˚26'15"N, 131˚41'52"E.
c. 24˚23'15"N, 130˚47'52"E.
d. 24˚53'15"N, 130˚03'52"E.

U. S. Air Force Training Areas

1. Central Honshu Air to Air Range (Kashima Nada, E Coast of Honshu).—Area bounded by the following parallels and meridians:
a. 36˚00'12"N.
b. 36˚40'11"N.
c. 141˚04'48"E.
d. 141˚20'48"E.
This area is in use daily from 0700 to 2000.

2. Kyushu Air to Air Range (W of Tsuno Shima, NW Coast of Honshu).—Area bounded by a line joining the following positions:
a. 34˚51'11"N, 130˚35'06"E.
b. 34˚43'31"N, 130˚52'01"E.
c. 34˚08'52"N, 130˚29'01"E.
d. 34˚16'57"N, 130˚12'37"E.
This area is in use Monday through Friday from 0700 to 1700.

3. Misawa Air to Ground Range (N of Hachinohe Ko, E Coast of Honshu).—Area contiguous to the land within a radius of 8,045m centered at a position 40˚52'08.6"N, 141˚23'02.1"E, between lines extending 058˚ and 108˚ from position 40˚51'52.7"N, 141˚20'37.0"E.
This area is in use daily from 0700 to 2000 and at other times as announced.

4. Northern Honshu Air to Air Range (E of Hachinohe Ko, E Coast of Honshu).—Area bounded by a line joining the following positions:
a. 40˚50'10"N, 142˚11'47"E.
b. 40˚50'10"N, 142˚59'46"E.
c. 40˚44'10"N, 142˚59'46"E.
d. 40˚24'10"N, 142˚32'47"E.
e. 40˚24'10"N, 142˚13'47"E.
This area is in use daily from 0700 to 2000.

5. Le Shima Auxiliary Airfield (Nansei Shoto)
Water area.—Area contiguous to the land within a radius of 2 miles centered at position 26˚43'54.9"N, 127˚45'34.2"E, N of a line extending 222˚ from position 26˚42'48.4"N, 127˚45'07.7"E.
Air spaces:

(A) Area within a radius of 5 miles centered at a position 26˚44'13.9"N, 127˚45'53.2"E.

(B) Area bounded by a line joining the following positions, with the line between point d, point e, point f, and point a being the arc, with a radius of 15 miles, centered at position 26˚44'13.9"N, 127˚45'53.2"E.

a. 26˚52'09.9"N, 128˚00'08.1"E.
b. 26˚48'48.9"N, 127˚57'15.1"E.
c. 26˚40'14.3"N, 127˚35'53.0"E.
d. 26˚51'14.2"N, 127˚30'5.03"E.
e. 26˚53'36.2"N, 127˚32'45.0"E.
f. 26˚59'12.2"N, 127˚47'07.0"E.

This area is in use Monday to Friday from 0600 to 2300 and on Saturday from 0600 to 1200 and from 1700 to 2300.

6. Tori Shima Range (Nansei Shoto):

Water area.—Area within a radius of 3 miles centered at position 26˚35'44.3"N, 126˚49'59.2"E.

Air space.—Area within a radius of 5 miles centered at position 26˚36'14.3"N, 126˚49'53.2"E.

This area is in use daily from 0600 to 2400.

7. Idesuna Shima Range (Nansei Shoto):

Water area.—Area contiguous to the land within a radius of 2 miles centered at position 26˚23'16.0"N, 127˚06'13.4"E.

Air space.—Area bounded by a line joining the following positions:

a. 26˚27'14.1"N, 126˚55'53.3"E.
b. 26˚27'14.0"N, 127˚06'53.4"E.
c. 26˚12'14.0"N, 127˚06'53.4"E.
d. 26˚12'14.4"N, 126˚55'53.2"E.

This area is in use Monday through Saturday from 0600 to 2300.

8. Northern Okinwa Range (Air Space) (NW of Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions, with the line between point c and point d being the arc ,with a radius of 120 miles, centered at position 26˚22'14"N, 127˚47'53"E, and the line between point e and point a being the arc, with a radius of 72 miles, centered at the same position:

a. 27˚05'26"N, 126˚42'59"E.
b. 27˚04'45"N, 126˚39'05"E.
c. 27˚30'14"N, 125˚56'53"E.
d. 28˚17'14"N, 127˚07'53"E.
e. 27˚32'02"N, 127˚25'35"E.

This area is in continuous use.

9. Southern Okinwa Range (air space) (S of Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions:

a. 25˚14'15"N, 127˚34'53"E.
b. 24˚16'45"N, 127˚34'53"E.
c. 24˚16'45"N, 128˚39'53"E.
d. 25˚04'45"N, 128˚39'53"E.
e. 25˚14'15"N, 128˚29'53"E.

This area is in continuous use.

10. Alpha (air space) (E of Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions:

a. 26˚53'14"N, 128˚54'53"E.
b. 27˚24'14"N, 129˚14'52"E.
c. 27˚29'14"N, 129˚34'52"E.
d. 27˚33'14"N, 129˚59'52"E.
e. 27˚06'14"N, 130˚14'52"E.
f. 27˚06'14"N, 129˚09'52"E.

This area is in use daily from 0600 to 2000.

U. S. Army and U. S. Marine Corps Training Areas

1. Northern Training Area (vicinity of the mouth of Ukagawa River, Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions:

a. 26˚41'50.0"N, 128˚17'17.0"E.
b. 26˚41'50.0"N, 128˚17'53.0"E.
c. 26˚41'26.0"N, 128˚17'53.0"E.
d. 26˚41'26.0"N, 128˚16'46.0"E.

Fishing and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

2. Camp Schwab (Vicinity of Oura Wan, Okinawa Shima, Nansei Shoto):

(A) Area contiguous to the land out to a distance of 500m between lines extending 090˚ from position 26˚31'54.0"N, 128˚02'44.1"E and extending 132˚45' from position 26˚31'11.0"N, 128˚02'09.1"E.

Small-scale fishing, except for the use of fishing nets, is allowed in this area when it is in use provided it causes no interference withthe activities in this area..

(B) Area bounded by a line joining the following positions and the shore:

a. 26˚32'14.0"N, 128˚05'17.1"E.
b. 26˚29'48.0"N, 128˚08'06.1"E.
c. 26˚25'29.0"N, 128˚03'42.1"E.
d. 26˚25'29.0"N, 128˚01'28.1"E.
e. 26˚28'56.0"N, 127˚59'50.1"E.
f. 26˚33'02.0"N, 128˚02'03.1"E.
g. 26˚33'05.0"N, 128˚02'21.1"E.
h. 26˚33'14.0"N, 128˚02'30.1"E.

Mooring, remaining, anchoring, diving, and all other continuous actions are prohibited. Fishing, except for the use of fishing nets, and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

(C) Area within 200m on each side of a line joining the following positions and the shore:

a. 26˚31'38.5"N, 128˚02'55.1"E.
b. 080˚ 1,000m from point a.
c. 145˚ 2,150m from point b.

Diving and all other continuous actions are prohibited. Fishing, except for the use of fishing nets, and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

(D) Area bounded a line joining the following positions and the shore:

a. 26˚30'52.5"N, 128˚01'58.1"E.
b. 132˚45' 800m from point a.

c. 132˚45' 800m from point d below.
d. 26˚31'11.0"N, 128˚02'09.1"E.

Fishing, except for the use of fishing nets, and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

3. Camp Hansen (Kushi Wan, Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions and the shore:

a. 26˚30'13.0"N, 127˚59'32.1"E.
b. 090˚ 471m from point a.
c. 090˚ 500m from point d below.
d. 26˚29'58.0"N, 127˚59'36.1"E.

Fishing and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

4. Kin Red Beach Training Area (Kin-Nakagusuku Ko, Okinawa Shima, Nansei Shoto):

(A) Contiguous to the land out to a distance of 500m between lines extending 180˚ from the following positions:

a. 26˚27'01.0"N, 127˚53'50.2"E.
b. 26˚26'51.0"N, 127˚54'51.5"E.

Mooring, remaining, anchoring, diving, and all other continuous actions are prohibited. Fishing and navigating are allowed in this area when it is not in use.

(B) Within 150m on each side of a line extending 3,000m, 194˚30' from position 26˚26'49.0"N, 127˚54'39.5"E.

Fishing and navigating are allowed in this area when it is not in use.

5. Kin Blue Beach Training Area (Kin-Nakagusuku Ko. Okinawa Shima, Nansei Shoto):

(A) Contiguous to the land out to a distance of 500m between lines extending 090˚41' from position 26˚26'38.0"N, 127˚56'37.1"E, and extending 180˚41' from position 26˚26'26.0"N, 127˚56'05.1"E.

Fishing, except set net fishing, and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

(B) Area bounded by a line joining the following positions and the shore:

a. 26˚26'26.0"N, 127˚56'08.1"E.
b. 26˚25'26.0"N, 127˚56'08.2"E.
c. 26˚25'27.0"N, 127˚56'36.1"E.
d. 26˚26'27.0"N, 127˚56'36.1"E.

Fishing, except set net fishing, and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

6. Camp Courtney (Kin-Nakagusuku Ko, Okinawa Shima, Nansei Shoto).—Area contiguous to the land out to a distance of 500m between lines extending 037˚11' from the following positions:

a. 26˚24'14.0"N, 127˚50'46.2"E.
b. 26˚23'24.0"N, 127˚51'57.2"E.

When this area is in use, mooring, remaining, anchoring, diving, and all other continuous actions are prohibited. Pole fishing is allowed in this area when it is in use provided it causes no interference with the activities in this area.

7. Ukibaru Shima Training Area (Kin-Nakagusuku Ko and Approach, Okinawa Shima, Nansei Shoto).—Area within a radius of 850m centered at position 26˚18'05.1"N, 127˚59'31.7"E.

Fishing and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

8. Tsuken Shima Training Area (Kin-Nakagusuku Ko, Okinawa Shima, Nansei Shoto).—Area bounded by a line joining the following positions and the shore:

a. 26˚15'45.1"N, 127˚56'13.7"E.
b. 273˚30' (magnetic) 5,487m from point a.
c. 273˚30' (magnetic) 5,487m from point d below.
d. 26˚14'51.1"N, 127˚55'59.7"E.

Fishing and navigating are allowed in this area when it is in use provided these activities cause no interference with the activities in this area.

9. Lo Shima Communication Site (vicinity of Tobiishi Hana, Io Shima, Nansei Shoto):

(A) Area bounded by a line joining the following positions and the shore:

a. 24˚45'29.8"N, 141˚18'14.1"E.
b. 24˚45'49.8"N, 141˚19'53.1"E.
c. 24˚43'49.8"N, 141˚21'53.1"E.
d. 24˚41'49.8"N, 141˚17'53.1"E.
e. 24˚43'49.8"N, 141˚15'53.1"E.
f. 24˚44'51.8"N, 141˚17'55.1"E.
g. 24˚45'14.8"N, 141˚17'44.1"E.

Fishing is prohibited when this area is in use.

(B) Area bounded by a line joining the following positions and the shore:

a. 24˚46'17.8"N, 141˚17'39.1"E.
b. 24˚44'29.8"N, 141˚16'23.1"E.
c. 24˚44'57.8"N, 141˚13'22.1"E.
d. 24˚48'56.8"N, 141˚15'19.1"E.
e. 24˚48'22.8"N, 141˚16'29.1"E.
f. 24˚47'04.8"N, 141˚16'59.1"E.
g. 24˚47'12.8"N, 141˚17'27.1"E.

Fishing is prohibited when this area is in use.

Fishing Areas

General

Fishing operations of all kinds, including drift netting, long lining, trawling, seine netting, and gill netting are carried out virtually throughout the year in all the sea areas around the coasts of Japan. Fishing by fixed nets also takes place.

In addition fish havens and marine farms are very numerous in Japanese waters and their numbers are increasing.

Fixed fishing nets.—Fixed fishing nets are set within 2 miles offshore in many places off the coasts of Japan, and in some cases they may extend up to 5 miles offshore.

These nets are shown on a special chart issued by the Japanese Coast Guard. Newly set fixed nets, which are considered hazardous to navigation, are published in Japanese Notices to Mariners or promulgated by Radio Navigational Warnings.

Fish havens.—Fish havens may be encountered on the sea bed or on the surface, generally within 5 miles of the coast, but may also be located up to 6.5 miles off the coast. Fish havens may occasionally be marked by lights or lighted buoys.

Marine farms may be encountered on the surface, but they may be in intermediate mid-layer depths in as much as 2,500m and 20 miles offshore. Marine farms may be marked by lights or lighted buoys.

Drift netting.—Drift netting and long lining for salmon and trout are carried out off the W coasts of Honshu and Hokkaido, between the latitudes of 37˚N and 46˚N. Fishing is conducted from March to June from boats of 30 to 50 tons, using drift nets up to 6.5 miles in length, marked by flags and lights at each end and in the middle.

In Tsugaru Kaikyo, fishing takes place between March and May from boats of up to 10 tons, using drift nets up to 1,200m in length, marked by flags and lights at each end and in the middle. The operating areas for these fisheries and the periods during which they are to take place are promulgated each year by local Notices to Mariners and Radio Navigational Warnings.

Squid fishing.—Fishing for squid is carried out virtually throughout the Sea of Japan. The main fishing areas are N of Oki Shoto (Oki Gunto), N of Wakasa Wan, N of Sado Shima, in Tsugaru Kaikyo, and in the W approaches to that strait. Fishing is carried out from boats of up to 100 tons, principally between July and October, when up to 1,300 boats may go out each day. Lights are exhibited at night to attract the fish.

Dip netting.—Dip netting occurs off the E and N shores of Hokkaida from August until November. The major fishing grounds are located E of Erimo Misaka, near the N entrance to Nemburo Kaikyo, and seaward of Abashiri Wan. Numerous vessels, normally less than 100 tons, operate here. Lights are exhibited at night to attract the fish.

Naikai Seto (Inland Sea)

Large groups of fishing boats congregate in various places, small sailing craft are very numerous and vessels with long tows, some as long as 0.6 mile, are frequently encountered.

Some of these vessels and craft have weak running lights which cannot be seen at all or only with difficulty. Others show lights only when vessels approach so closely that there is little margin for clearance. For these reasons extraordinary caution is required when navigating at night.

The fishing season is at its height from April to August, coinciding with the period of heavy fogs, and adds greatly to the difficulties of vessels underway. The boats congregate thickly in the channels and other narrow places both by day and by night, being especially numerous about the time of slack water. They will not be encountered when the current is at its greatest strength.

In the Bisan Seto and Mizushima fairways and the channels surrounding them, nets are laid at slack water and not recovered until the following slack water. Although these nets are buoyed the buoys may not be visible when the streams are strong. Caution is advised.

Fish havens are usually situated on the seabed and are composed of concrete blocks, scrap metal (including vehicles), or sunken hulks. Surface fish farms consist of floating rafts under which fish are encouraged to feed out of the sunlight.

Concentrations of fishing vessels may be expected in the vicinity of fish havens where fish are caught by traditional fishing methods.

Marine farms are usually on the surface, but they may be in the middle layers in deep water. They consist of a rectangular structure, typically measuring 50m by 20m, made up of two layers of thick wire mesh. Fish are bred, fed, and harvested in these cages. These structures may or may not be marked by lights or lighted buoys. Marine farms are frequently moved to safe waters before the onset of winter. Both fish havens and marine farms are very numerous in the waters of Naikai Seto.

Net fishing for sea bream takes place from the beginning or middle of April until the rainy season; boats engaged in this work begin operations in the waters E of Akashi Kaikyo and gradually proceed W to Bingo Nada. This type of fishing is not conducted W of Kurushima Kaikyo.

Motorboats are used extensively in Naikai Seto. The smaller ones display side lights, but no masthead lights, and at night they are easily mistaken for sailing vessels. Some of these boats do not display stern lights and when overtaken are occasionally not discovered until the sound of the motors are heard.

Small boats, under oars and engaged in setting or weighing octopus traps, are a hindrance to navigation in Naikai Seto.

They may be encountered on all routes at any time of the year and while they do not often congregate, they are in constant movement and may be mistaken for craft of reasonable speed. Numerous fishing reefs, shown on the charts, are located in the waters of Naikai Seto. Some of these at depths of 20.1m or less are a hazard to surface navigation.

Government

Flag of Japan

The government is a constitutional monarchy with a parliamentary government. The country is divided into 47 prefectures

The head of state is the Emperor and the head of government is the Prime Minister and his cabinet. The Prime Minister is selected by the Diet (parliament). The bicameral Diet consists of a 242-member House of Councillors, with 144 directly-elected members and 98 members elected through proportional representation, serving 6-year terms, and a 480-member House of Representatives, with 300 directly-elected members and 180

members elected through proportional representation, serving 4-year terms.

The legal system is based on European civil law with English-American influence.

The capital is Tokyo.

Holidays

The following holidays are observed:

January 1-3	New Year's Days
Second Monday in January	Adult Day
February 11	Foundation Day
Festival of the Vernal Equinox	Variable
April 29	Nature Day
May 3	Constitution Day
May 4	Citizen's Day
May 5	Children's Day
Third Monday in July	Navy Day
Third Monday in September	Respect for the Aged Day
Festival of the Autumnal Equinox	Variable
Second Monday in October	Physical Fitness Day
November 3	National Culture Day
November 23	Labor Thanksgiving Day
December 23	Emperor's Birthday
December 31	New Year's Eve Bank Holiday

Industries

The main industries are based on heavy electrical equipment, construction and mining equipment, motor vehicles and parts, electronic and telecommunication equipment, machine tools, automated production systems, locomotives and railroad rolling stock, ships, chemicals, textiles, and food processing.

Languages

Japanese is the official language. English is widely studied in schools and many Japanese have a usable knowledge of English.

Mined Areas

Many mine fields were laid in Japanese waters laid during World War II. Due to the passage of time, the risk in these areas to surface navigation is now considered no more dangerous than the ordinary risk of navigation. A small risk may still exist in some areas, close to the coast, inside the 10m line, regarding anchoring, fishing, or any other form of underwater activity close to the sea bed.

Navigational Information

Enroute Volumes

Pub. 158, Sailing Directions (Enroute) Japan, Volume 1.
Pub. 159, Sailing Directions (Enroute) Japan, Volume 2.

Maritime Claims

The maritime territorial claims of Japan are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* Claims strait baselines. A high seas corridor remains in five "international straits," as follows:

1. Tsugaru Strait (Tsugaru-kaikyo).
2. Le Perouse Strait.
3. Osumi Strait (Osumi-kaikyo).
4. Tsushima West Channel.
5. Tsushima East Channel.

Maritime Boundary Disputes

Dispute with Russia over the islands of Etorofu, Kunashiri, Shikotan, and the Habomai Group, known in Japan as the "Northern Territories" and in Russia as the "Southern Kurils." These islands were occupied by the Soviet Union in 1945, are now administered by Russia, and are claimed by Japan.

China and Taiwan claim the Japanese-administered Senkaku Islands (Diaoyu Tai) (25˚50'N., 124˚05'E.).

Dispute with South Korea over the South Korean-administered Liancourt Rocks (Dokdo) (Take-shima) (37˚14'N., 131˚53'E.).

Pilotage

Details of pilotage services for each district are described in the applicable Sailing Directions (Enroute) for Japan.

Vessels should make arrangements for pilots through their agents in Japan. However if this is not possible pilots may be requested by radio, well in advance, addressed to the appropriate Pilots Association or harbormaster.

Pilotage is compulsory for vessels over 10,000 grt in the following channels and straits:

1. Akashi Kaikyo.
2. Bisan Seto.
3. Irago Suido.
4. Kanmon Kaikyo.
5. Kurushima Kaikyo.
6. Uraga Suido.

Huge vessels, oil tankers, liquefied gas tankers, and vessels carrying dangerous cargo should arrange for watching boats to

guard their course until their safe navigation is confirmed even after they leave the traffic route.

The Japanese Coast Guard has requested that all foreign flag vessels and vessels carrying dangerous cargo employ pilots in order to maintain the safety of shipping traffic in the waters surrounding Japan. The agency has also requested that vessels take pilots on board when they navigate the Irago Suido and Yura Seto (Tomogashima Suido).

Usually Japanese pilot boats have a black or green hull with the word pilot in white on both sides and a white superstructure. The signals for a pilot are those established in the International Code of Signals.

Each licensed pilot is provided with a copy of the Japanese pilot regulations and is instructed to produce it when required by those employing him.

Members of the Japanese Pilots Association have been instructed to obtain the signature of the Master and/or Agent to a form of indemnity with regard to liability in the event of loss or damage to the vessel.

Pollution

Vessels navigating in the coastal waters of Japan to notify the Japanese Coast Guard (JCG), via the nearest coast radio station, in cases of the discharge of oil, noxious liquids, or other harmful substances in package or container form. Reports should include the following information:

1. Time, date, and place of discharge.
2. Type, quantity, and condition of dispersal.
3. Type, quantity, and condition of the packaging/containers.
4. Wind and sea conditions.
5. Measures already taken to prevent maritime pollution.
6. Vessel name, type, gross tonnage, and port of registry.
7. Name/title and address of vessel's owner.
8. Type and quantity of oil, etc., loaded on the vessel.
9. Type and quantity of containers/packages loaded on the vessel.
10. Type and quantity of materials carried on board for the prevention of maritime pollution.
11. Location and extent of damage to the vessel if this was the cause of the discharge.

When a collision, grounding, engine failure, or other maritime accident occurs and results in the possibility of the discharge of oil, noxious liquid substances, or harmful substances, the master must send the following information to the JCG:

1. Vessel name, type, gross tonnage, and port of registry.
2. Name/title and address of vessel's owner.
3. Type and quantity of oil, etc., loaded on vessel.
4. Type and quantity of materials carried on board for the prevention of maritime pollution.
5. Time, date, and place of accident.
6. Area likely to be affected by discharge, spillage, etc.
7. Wind and sea conditions.
8. Action to be taken to prevent maritime pollution.
9. Type and quantity of containers/packages loaded on the vessel (in the case of imminent discharge of harmful substances).

Vessels discovering dispersed oil slicks should report this information immediately to the JCG.

Insurance Requirements

All vessels 100 gross tons and greater calling at any Japanese port must fulfill the following entry requirements:

1. The vessel must have appropriate P & I insurance (Protection and Indemnity insurance) .
2. The vessel must carry the relevant Certificate(s) of Insurance on board.
3. Vessels must report the status of insurance to a District Transport Bureau before entering the port.

Vessels that do not meet these requirements will be denied entry. Further information can be found on the Internet, as follows:

Japan—Maritime Insurance Requirements

http://www.mlit.go.jp/kaiji/insurance/insurance_portal.htm

Regulations

Japan, in general, follows the International Regulations for Preventing Collisions at Sea (International Rules of the Road).

There are a few exceptions where Japanese Law provides that in certain ports, canals, and other specified areas in the Inland waters of Japan, rules other than the International Rules may be used. These rules, which are exceptions, are contained in the Japan Port Regulations Law, the Japan Ministry of Transportation Regulations for the Enforcement of the Port Regulations Law, and the Maritime Traffic Safety Law.

General Port Regulations

The following regulations in force in Japanese ports are given as guidance for entering vessels. Local regulations must be ascertained upon arrival in the port.

When entering a port vessels must hoist their national ensign and their International Call Signals. These signals shall remain hoisted until the vessel's arrival has been reported to the Captain of the port or the harbormaster.

Arrival of a vessel must be reported to the Captain of the Port within 24 hours in the prescribed form. A vessel shall not be entitled, before the presentation of such report, to enjoy the facilities of customs examination.

Masters of vessels which depart a port and return within 12 hours of their departure because of bad weather, for repairs, or any other reason, must present their reason in writing to the Captain of the Port in lieu of the usual arrival Report.

Communication with the shore or with other vessels is prohibited until official permission is granted.

With regard to waters other than those ports listed as Specified or Open Ports, foreign vessels have the right of passage but are not permitted to anchor except under stress of weather or Force Majeure (Act of God or inevitable accident). If a vessel is forced to enter or anchor in such waters the Master should communicate with local authorities without delay and request instructions.

Maritime Traffic Safety Law

The laws and regulations applying to vessels in coastal waters and ports of Japan may be found in the English translation of the Japanese publication Japan Maritime Safety Laws

and Regulations. Mariners should endeavor to obtain a copy of this publication from the Japanese Coast Guard upon arrival in Japanese waters. Excerpts from the above publication follow.

The purpose of the Maritime Traffic Safety Law is to ensure the safety of ships in congested areas by prescribing regulations and enforcing special modes of navigation within traffic routes.

As promulgated by Japanese Authorities the Maritime Traffic Safety Law applies to the sea areas of Tokyo Wan, Ise Wan (including the sea areas adjacent to the mouth of Ise Wan, and those portions of Mikawa Wan which are adjacent to Ise Wan) and Seto Naikai. The Maritime Traffic Safety law does not apply within certain inshore areas normally used only by fishing vessels nor within port and harbor limits which are covered by the Port Regulations Laws. Mariners are advised that Japanese authorities will exact fines for violations of the law.

International Ship and Port Facility (ISPS) Code

The ISPS Code applies to ships on international voyages and port facilities directly interfacing with these ships. The following information must be sent by all vessels entering Japanese ports or entering specified sea areas (Tokyo Wan, Ise Wan, and Seto Naikai):

1. Vessel name.
2. Flag.
3. Vessel type.
4. Call sign.
5. IMO number (Registration number for fishing vessels).
6. Gross tonnage and length overall.
7. Name and address of owner.
8. Name and address of operator.
9. Name and address of agent
10. Number of crew.
11. Name of port, name of mooring facility, and ETA of port entry.
12. Position of entry and ETA into specified sea area.
13. Names of subsequent Japanese ports, names of mooring facilities and ETAs of port entry.
14. Position of entry and ETA into specified sea area after leaving a Japanese port.
15. Whether vessel has a Ship Security Alert System on board. *
16. Security level of the vessel.*
17. Name of Ship Security Officer. *
18. Name and title of Company Security Officer *
19. Whether vessel has records on ship security. *
20. The number and issuer of the vessel's International Ship Security Certificate or Interim International Ship Security Certificate. *
21. Items below concerning the last ten ports visited prior to a call at a Japanese port:
    a. The names of the countries where the ports are located, the names of the ports, and the dates of entry to and departure from the ports.
    b. Security Level set by the ship.
    c. Security Level set to the port.
    d. Security Level implemented at the port.
    e. Security measures implemented at the port, if any.
    f. Whether or not cargo or passengers are to be unloaded in Japan which were loaded at the ports in question.
    g. Whether or not ship has ever entered a Japanese port.
    h. Any issues concerning maintaining the security of the ship during its voyage or port calls.

* Not required for cargo ships and fishing vessels of less than 500 gross tons.

Reports should be made 24 hours prior to entry into a port to the Japanes Coast Guard office which holds jurisdiction for that port; if entering regulated waters, a notice of more than 24 hours to the Japanese Coast Guard office responsible for those waters should be made.

The report should be made by the master, owner, or agent. Any amendments should be reported immediately. In the event of an entry to a port involving an emergency or imminent danger, the report should be made immediately after entry.

General Regulations (Extracts)

The term Huge Vessel shall mean any vessel of 200m or more in length.

A vessel, other than a vessel engaged in fishing or other operations (cable-laying, surveying, mine sweeping, or construction work), intending to enter, leave, or cross a traffic route, shall keep out of the way of a vessel navigating along the traffic route.

A vessel, engaged in fishing or other operations intending to enter, leave, or cross a traffic route or when stopped within a traffic route shall keep out of the way of a Huge Vessel which is navigating along the traffic route.

Vessels of 50m or more in length are required to use the traffic routes.

Within the following Traffic Routes (TR) vessels shall not navigate at a speed exceeding 12 knots:

Uraga Suido	Entire TR
Nakano-Se	Entire TR
Irago Suido	Entire TR
Mizusima	Entire TR
Bisan Seto East	The section of the TR between a line drawn at 353˚ from Ogi Sima Light House (34˚25'50"N., 134˚03' 48"E.) and the boundary line of the W entrance of the TR.
Bisan Seto North	The section of the TR between a line drawn at 160˚ from Zatome Hana on Hon Sima to the NE extremity of Usi Sima.
Bisan Seto South	The section of the TR between a line drawn at 160˚ from Zatome Hana on Usi Sima and the boundary line of the E entrance of the TR.

Vessels joining, leaving, or crossing certain traffic routes to indicate intentions, are required, by day, to display a code of flag signals, by night, to make certain sound signals. See appropriate Sailing Directions (Enroute) for Japan for details.

Vessels intending to cross a traffic route shall do so as nearly as possible at right angles.

Within traffic routes no vessel is permitted to anchor except in an emergency.

Lights and Shapes

Lights and shapes are required to be shown by certain vessels when navigating within areas where the Maritime Traffic Safety Law applies. Lights are exhibited by night and shapes are shown by day.

Huge Vessels shall display a green all-round light to be visible at least 2 miles and flashing at regular intervals between 180 and 200 times per minute. By day, two black cylinders shall be displayed with a diameter of 0.6m or greater and a height twice as long as the diameter; placed in a vertical line not less than 1.5m apart (with regard to a huge vessel which exhibits a cylinder in accordance with Article 28 of the Law for Preventing Collisions at Sea, these shapes shall not be placed with the cylinder in a vertical line).

Vessels carrying dangerous cargoes, shall exhibit a red all-round light to be visible at least 2 miles and flashing at regular intervals between 120 and 140 times per minute. By day, the International Code Flag B under the First Substitute will be displayed.

Vessels engaged in construction and fishing, will exhibit two all-round green lights vertically disposed in a lower position than the steaming light. By day, a white diamond over two red balls, vertically disposed, will be displayed.

Vessels engaged in emergency operations, shall exhibit an all-round red light flashing between 180 and 200 times per minute. By day, a red cone, point u,p will be displayed.

Special patrol vessels in routes, will exhibit an all-round green light flashing between 120 and 130 times per minute. By day, a streamer 2m long, with red and white stripes, will be displayed.

Traffic Route Regulations

Categories of Vessels.—Several vessel types shall report to shore authorities prior to navigation in any of the traffic routes stipulated in the Maritime Traffic Safety Law. Upon receipt of the report, if necessary, instructions for safe navigation will be relayed to the respective vessel:

1. Huge Vessel—vessels 200m or more in length.
2. Vessels carrying dangerous cargo, as follows:

   a. Vessels over 300 grt or more carrying 80 tons or more of explosives or 200 tons or more of organic peroxide.

   b. Vessels of 1,000 grt or more carrying inflammable liquids or high pressure gas in bulk.

   c. Vessels as in b above that have discharged but which are still subject to the risk of fire or explosion (not gas free).
3. Vessels towing or pushing when the total length of tow including the length of the towing vessel is 200m or more.

Reports.—Huge Vessels; vessels of 25,000 grt and over carrying liquefied gas; and vessels towing or pushing, as described above, shall make initial reports by noon of the day before entering the traffic route. Other vessels should make this report 3 hours prior to entering the traffic route.

Subsequent amending reports should be made at least 3 hours in advance of entering the traffic route. If the amendments occur less than 3 hours before entering the traffic zone, the report should be sent immediately.

Reports should be sent to the appropriate Japanese Coast Guard (JCG) station, as given in the accompanying table. If contact with the appropriate station is unable to be established, the report can be sent to any of the stations listed in the table or to Naha, Moji, Kagoshima, Shiogama, or Kushiro.

The initial report should commence with the word Notification, followed by, in consecutive order, the following listed numbers, contents, and vessel category:

Traffic Route Reports Call-in Stations

Traffic Route (TR)	Designated JCG Station	Call
Uraga Suido TR	Yokohama	Yokohama Sea Patrol Radio (Yokohama Hoan) (JGC) MMSI: 004310301
Naka-no-se TR		
Irago Suido TR	Nagoya	Nagoya Sea Patrol Radio (Nagoya Hoan) (JNT) MMSI: 004310401
Akashi Kaikyo TR	Kobe or Hiroshima	Kobe Sea Patrol Radio (Kobe Hoan) (JGD) MMSI: 004310501 Hiroshima Sea Patrol Radio (Hiroshima Hoan) (JNE) MMSI: 004310601
Bisan Seto East TR		
Uko East TR		
Uko West TR		
Bisan Seto North TR		
Bisan Seto South TR		
Mizushima TR		
Kurushima Kaikyo TR		

No.	Contents	Category
1.	Addressee (abbreviated form).	1, 2, 3
2.	Name and gross tonnage of vessel.	1, 2, 3
3.	Length of vessel (in meters).	1
4.	Maximum draft (in meters).	1
5.	Type of dangerous cargo and amount of each.	2
6.	Length of tow.	3
7.	Description of object being towed.	3
8.	Destination (port).	1, 2, 3
9.	Traffic route or part there of to be navigated (abbreviated form).	1, 2, 3
10.	Estimated date and time of entry into traffic route.	1, 2, 3
11.	Estimated date and time of departure from traffic route.	1, 2, 3
12.	Vessels call sign.	1, 2, 3
13.	Method of communication with the JCG.	1, 2, 3
14.	Name and address of agent through whom instructions may be forwarded (applicable only if report is made by letter or telegram).	1, 2, 3

If any item is not applicable then insert NA. If more than one traffic route is to be navigated, items 1, 9, 10, and 11 should be reported in sequence of traffic routes.

Vessels described in 2c should indicate the amount of dangerous cargo as 0.

If two or more adjacent traffic routes are to be navigated, it is sufficient only to report the estimated date and time of departure from the final traffic route.

Amendments.—An amending report should start with the word Amendment, which should be followed by the numbered items listed below:

1. Addressee and traffic route.
2. Name and gross tonnage of the vessel.
3. Number of item listed above, under Initial Report, that is to be changed.

Radiotelephone should be used if possible; ask for the Traffic Route Control Officer.

Port Regulations Law

The following represents excerpts of the Port Regulations Law, which are regulations for vessels in Japanese ports, including specified ports.

Entering, Departing, and Berthing.—At least 3 hours prior to entering a port, the following information should be sent to the appropriate Captain of the Port:

1. Vessel name.
2. Gross tonnage and maximum draft on entering.
3. Port and date of departure.
4. ETA at port limits.
5. Reason for entering.

Inbound vessels carrying dangerous cargo should first obtain instructions from the Captain of the Port prior to crossing the port limit. Vessels intending to enter a port at night should request permission in advance.

A vessel having entered a port shall submit without delay to the Captain of the Port an entrance report that includes the following:

1. Name, type, nationality, and registry of the vessel.
2. Gross tonnage, length, draft, and speed of vessel.
3. Name and address of owner (operator, if chartered).
4. Port of departure and last port of call.
5. Time and purpose of entrance.
6. Description and quantity of cargo.
7. Unusual events during voyage and safety information.
8. ETD, next port of call, and destination, if known when entering.

Departing vessels should report the following details if the ETD, next port of call, and destination were not included on the entering report:

1. Name, type, nationality, and registry of the vessel.
2. Gross tonnage, length, draft, and speed of vessel.
3. Name and address of owner (operator, if chartered).
4. Description and quantity of cargo.
5. ETD, next port of call, and destination.

In addition, vessels should contact the appropriate Captain of the Port, as follows:

1. When entering or leaving port in an emergency.
2. For designation of anchorage.
3. When shifting in an emergency.
4. If required to comply with traffic control.
5. To report on measures to prevent danger caused by an accident in the port or near the port limit.
6. Sightings of hazards to navigation or anything unusual in the aids to navigation.

The term specified port indicates a port suitable for accommodation of deep draft vessels or a port generally used by non-Japanese vessels.

Except in an emergency, vessels shall not enter a specified port between sunset and sunrise unless permission to do so has been obtained from the Captain of the Port.

The Captain of the Port, unless prior arrangements for berthing have been obtained, may designate an anchorage for an incoming vessel.

Except in an emergency vessels shall not shift berths without permission from the Captain of the Port.

Within a port vessels shall not anchor or moor in a place that would obstruct the passage of other vessels.

Steering and Sailing.—A vessel entering, leaving, or passing through a specified port shall use the prescribed fairways.

Vessels entering or leaving the fairway shall keep out of the way of vessels in the fairway.

Vessels shall not overtake within the fairways.

Vessels approaching the entrance to a specified port shall stay outside until departing vessels have cleared the entrance.

A vessel within or near the boundary of a specified port shall proceed at such a speed that will not endanger other vessels.

Dangerous Cargo.—Vessels carrying explosives or dangerous cargo shall inform the Captain of the Port and remain outside the limits of the specified port until instructions have been received.

Within a specified port vessels shall not load, discharge or transship dangerous cargo without permission of the Captain of the Port.

Channel Maintenance.—The discharge of ballast, waste oil, garbage, or any other similar waste material is prohibited within a port or within 10,000m (5.3 miles) from the boundary of a port.

General Port Regulations

Masters who infringe these Japanese regulations run the risk of a heavy fine, imprisonment, or confiscation of the vessel or cargo.

Vessels shall not enter a designated Specified Port, except in an emergency, between the hours of sunset and sunrise unless permission to do so has previously been obtained from the Captain of the Port. Vessels may enter at night without prior notice in order to avert a sea disaster or for some other unavoidable circumstance.

Masters planning to anchor their vessels in a designated Specified Port must first obtain an anchorage assignment from the Captain of the Port, unless advance arrangements have been made to moor to a buoy, quay, pier, or other mooring facility.

The Captain of the Port will designate an anchorage unless special circumstances exist; he may also assign anchorage in ports which are not designated Specified Port under the Port Regulations Law. Berths will be assigned by the Captain of the Port or harbormaster and such berth assignments may be changed by the authorities when deemed necessary. A vessel may not leave her berth without permission except in an emergency and in such case the reason for so doing must be reported without delay.

When a vessel having explosives or other dangerous cargo on board, except that provided for use of the vessel, is scheduled to enter a Specified Port she shall remain outside the harbor limits until the Captain of the Port is so informed and special instructions concerning entry are received from him. Such vessels, while awaiting instructions, must display flag B of the International Code of Signals between sunrise and sunset and must show a red light by night. These provisions also apply to a nuclear-powered vessel entering a Specified Port.

A vessel carrying dangerous cargo will anchor or berth only at the place specifically designated by the Captain of the Port.

If the cargo is other than explosives the Captain of the Port may remove this restriction if, in view of the duration of the vessel's stay in port, type of cargo, and method of safeguarding cargo, he considers it in the best interest. Permission to handle dangerous cargo must be obtained prior to handling same.

When the Captain of the Port considers that the handling of dangerous cargo is unsafe in the vessel's designated berth he may designate a safe place for transfer outside the harbor and grant permission for the operation to be accomplished.

When such permission is granted the vessel is still considered to be within the limits of the Specified Port insofar as the authority and responsibility of the Captain of the Port are concerned.

Under provisions of the Port Regulations Law concerning the regulation of nuclear raw materials, nuclear fuel substances, and nuclear reactors, or when deemed necessary for preventing disasters from nuclear fuel substances, including used fuel, or from any substances, including nuclear fission products, or from nuclear reactors, the Captain of the Port may designate for a nuclear-powered vessel in a Specified Port or in the vicinity of the boundaries of a Specified Port the channel to be followed or the place to anchor or stay, give instructions relating to the rules of the road, restrict the movements of the vessel, or may order the vessel to leave the Specified Port or the vicinity thereof.

The permission of the Captain of the Port must first be obtained before a vessel can transport a dangerous object within a Specified Port or near the limits of a Specified Port.

No vessel other than miscellaneous vessels shall enter, depart, or pass through a Specified Port except by following the channel prescribed by the Enforcement Regulations of the Port Regulations Law; exceptions to this rule are made for the purpose of averting a marine disaster or because of other unusual circumstances. Miscellaneous vessels refer to launches, lighters, small boats, and all craft propelled by oars.

No vessel shall anchor or release a towed vessel in a prescribed channel except when it is necessary to avert a marine disaster, the vessel is not under command, the vessel is engaged in lifesaving or is assisting a vessel in immediate danger, or the vessel is engaged in construction work or operations with permission of the Captain of the Port.

Vessels entering or leaving the prescribed channel shall keep clear of vessels proceeding in the channel.

Vessels shall not proceed abreast on a parallel heading in a prescribed channel.

Vessels passing in a meeting situation shall each keep to the starboard side of the channel; overtaking and passing a vessel in the channel is not permitted.

Where there is a possible meeting situation at a harbor entrance of a Specified Port, the entering vessel shall remain outside and clear of the harbor entrance until the departing vessel is clear of the entrance.

Vessels in or near Specified Ports shall proceed at such a speed as not to endanger other vessels.

Within a port any vessel having a breakwater, quay, or other construction works to starboard or a vessel at anchor on her starboard hand, will pass the objects or anchored vessel as close as possible; when the objects or anchored vessel are on the vessel's port hand, such vessel will maneuver as necessary to pass them at as great a distance as practicable for safe navigation.

Miscellaneous vessels must give way to vessels other than miscellaneous vessels. Vessels other than miscellaneous vessels whose tonnage is less than that specified for a particular port by the Enforcement Regulations of the Port Regulations Law or vessels of less than 500 grt referred to as small craft shall, in a Specified Port where traffic is extremely congested, keep out of the way of vessels other than small craft and miscellaneous vessels.

Vessels other than small craft and miscellaneous vessels shall, when underway in a Specified Port display at a conspicuous place on the mast such signals as required by the Enforcement Regulations.

When an accident occurs in or near a harbor which is a hazard to marine traffic, the master of the vessel concerned shall

take proper steps to assure that the accident does not cause damage to other vessels by establishing markers, etc. in the danger area and shall notify the Captain of the Port immediately if in a Specified Port or the Chief of a nearby Japanese Coast Guard or Base if not in a Specified Port.

The Captain of the Port or Chief of Maritime Safety may, when there is danger to ship traffic and confusion of vessels in a Specified Port or other ports because of a marine accident or some other reason and when he deems it necessary to prevent such danger and alleviate such confusion, restrict or prohibit the navigation of vessels proceeding toward the Specified Port to such an extent as deemed appropriate.

Powerful lights, such as searchlights, that threaten the safe navigation of vessels will not be used within or near the limits of a port.

Quarantine Regulations

The following are extracts from the Japanese Quarantine Law. Additional remaining parts of the law should be ascertained on the arrival of a vessel in a harbor.

The Master of a vessel entering Japan from a foreign port of departure cannot land personnel or cargo in Japan until granted pratique or provisional pratique. The Master of a vessel shall bring his vessel into only an authorized quarantine anchorage of an authorized quarantine port. This requirement can be waived only with the specific authority of the Quarantine Officer at the port concerned. This rule also applies to vessels which have received persons or material on board from a vessel whose last port of call was foreign and which has not been granted pratique prior to the transfer.

The Master of a vessel shall not permit personnel to leave the quarantine area or move cargo to or from it until the vessel has been granted pratique, provisional pratique, or special permission waiving this rule has been granted by the responsible Quarantine Officer.

The Master of a vessel desiring and requesting pratique must inform the Quarantine Officer of any communicable diseases known to exist on board. The epidemic diseases against which quarantine inspections are conducted in accordance with the Quarantine Law are cholera, bubonic plague, typhus, smallpox, yellow fever, and malaria.

The Master of a vessel desiring pratique must bring his vessel into the designated quarantine area immediately. If, because of inclement weather or for other reasons, the Quarantine Officer directs that the vessel be brought to some location other than the designated quarantine area, the Master must comply.

The International Code Signal Quarantine Flag must be hoisted as soon as the vessel enters the quarantine area or place designated for quarantine inspection by the Quarantine Officer. The quarantine flag shall remain hoisted until pratique or provisional pratique is granted.

If, during the subsequent stay in port, it develops that a communicable disease is found on board and pratique or provisional pratique is withdrawn, the quarantine flag will be hoisted again until pratique or provisional pratique is granted again.

As soon as a vessel enters the quarantine area the Quarantine Officer will begin inspection immediately except for reasons of inclement weather or other unavoidable circumstances. However, if a vessel enters the quarantine area after sunset, the inspection may be postponed until dawn of the following morning.

Prior to receiving quarantine inspection the Master of the vessel must supply the Quarantine Officer the name of the vessel, register number, home port, and last port of call. In addition the Quarantine Officer may request the following information: list of crew, list of passengers, cargo manifest, voyage log, and such other papers as may be required for the quarantine inspection.

In the event that a vessel, not yet granted pratique or provisional pratique, enters a Japanese port to avoid a marine disaster or other peril, the Master of the vessel will, as soon as practicable, move the vessel to the quarantine area of the port or outside the limits of the port. In the event that under these circumstances it is not possible to move the vessel into the quarantine area or outside the port limits, the Master of the vessel shall report the existence of any epidemic diseases on board, port of departure, port of destination, and any other matters relative to quarantine and health measures to the nearest easily accessible Quarantine Station, or when none is easily accessible, to the nearest Public Health Facility. The cognizant Japanese official receiving the required report shall take action with regard to inspection, sanitization, and other procedures required by ordinances for the prevention of epidemic diseases.

The aforementioned extracts from the Quarantine Law do not apply to a Japanese or foreign naval vessel entering a port if there have been no quarantinable cases or circumstances on board. The commanding officer and the medical officer of such vessels shall report in writing to that effect to the quarantine officials. If conditions of contamination do apply to Japanese and foreign naval vessels, the commanding officer and the medical officer of such vessel must report to that effect to the quarantine officials; the aforementioned extracts will then apply to the naval vessel. The quarantine of a naval vessel will be carried out in accordance with the provisions of the Quarantine Law after consultation between the quarantine officials and the commanding officer of the vessel.

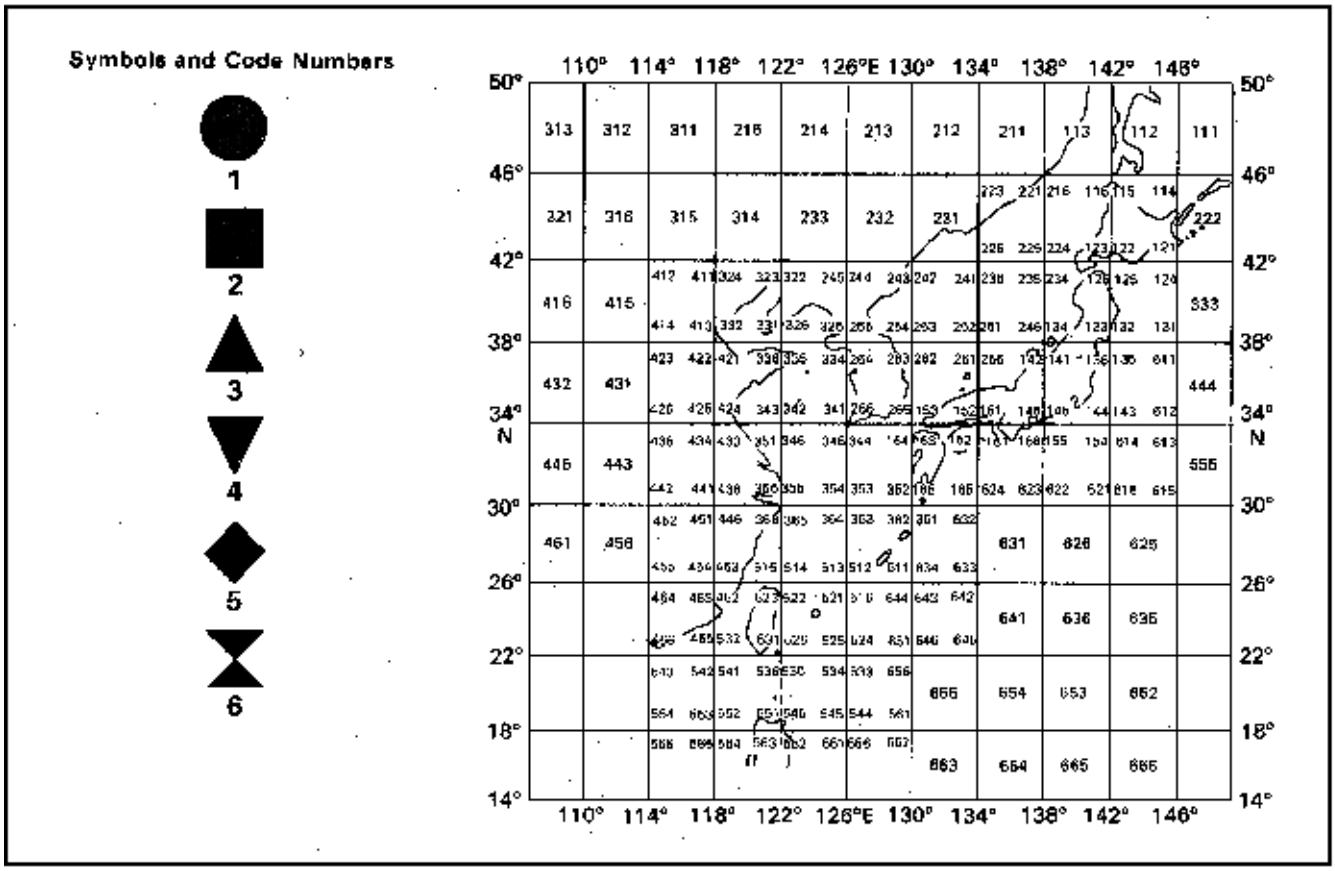
The Quarantine Officer may, if considered necessary, direct the Master of a vessel to exterminate vermin if in his opinion vermin extermination is not being satisfactorily accomplished on board. However, this shall not apply if the Master can produce a deratting certificate, issued within the past six months and there is no positive evidence of vermin on board.

The Quarantine Officer may, when it does not interfere with normal quarantine inspections, accede to the requests of ship owners or Masters to make inspections on board for infectious agents of epidemic diseases, fumigate and deratify a vessel, conduct a medical examination, give preventive inoculation to vessel's personnel, and issue various required government certifications relative thereto, collecting payment for service in accordance with the applicable government ordinance.

Search and Rescue

The Operations Center of the Japan Coast Guard (JCG) Headquarters will receive search and rescue information and disseminate it to the relevant domestic and foreign Rescue Coordination Centers.

Coast radio stations of the JCG maintain a continuous listening watch on VHF channel 16 and DSC 2187.5 kHz for



General Storm Signals (Day)—Symbols and Location Codes

distress traffic. Tokyo Sea Patrol Radio maintains a watch on HF DSC frequencies 4 MHz, 6 MHz, 8 MHz, 12 MHz, and 16 MHz.

Sea Patrol Radio Stations are assigned to the 11 JCG Regional Headquarters, as follows:

1. First Regional Headquarters—Otaru and Kushiro.
   E-mail: op-1@kaiho.mlit.go.jp
2. Second Regional Headquarters—Shiogama.
   E-mail: op-2@kaiho.mlit.go.jp
3. Third Regional Headquarters—Yokohama
   E-mail: op-3@kaiho.mlit.go.jp
4. Fourth Regional Headquarters—Nagoya
   E-mail: tokai-unyo@kaiho.mlit.go.jp
5. Fifth Regional Headquarters—Kobe.
   E-mail: op-5@kaiho.mlit.go.jp
6. Sixth Regional Headquarters—Hiroshima.
   E-mail: naikaiseibu-unyo@kaiho.mlit.go.jp
7. Seventh Regional Headquarters—Moji and Sasebo.
   E-mail: kitakyutotsu-unyo@kaiho.mlit.go.jp
8. Eighth Regional Headquarters—Maizuru.
   E-mail: op-8@kaiho.mlit.go.jp
9. Ninth Regional Headquarters—Niigata.
   E-mail: op-9@kaiho.mlit.go.jp
10. Tenth Regional Headquarters—Kagoshima.
    E-mail: op-10@kaiho.mlit.go.jp
11. Eleven Regional Headquarters—Naha and Ishigaki.
    E-mail: op-11@kaiho.mlit.go.jp

The JCG can be contacted by e-mail, as follows:

op@kaiho.mlit.go.jp

Signals

Anchoring/Berthing Signals

Visual signal stations which assign anchorage and berthing assignments to entering vessels and otherwise control ship traffic in specifically designated ports are given with the port description in the appropriate Sailing Directions (Enroute) for Japan.

Storm Signals

Two systems of visual storm signals are in use in Japanese ports, as follows:

1. General Storm Signals.—Shown to indicate the position of a cyclonic system, it direction of movement, etc.
2. Local Storm Signals.—Shown to indicate that gales or dangerous storms may be expected at the port where they are displayed.

In some ports, the general storm signals and the local storm signals are displayed side-by-side.

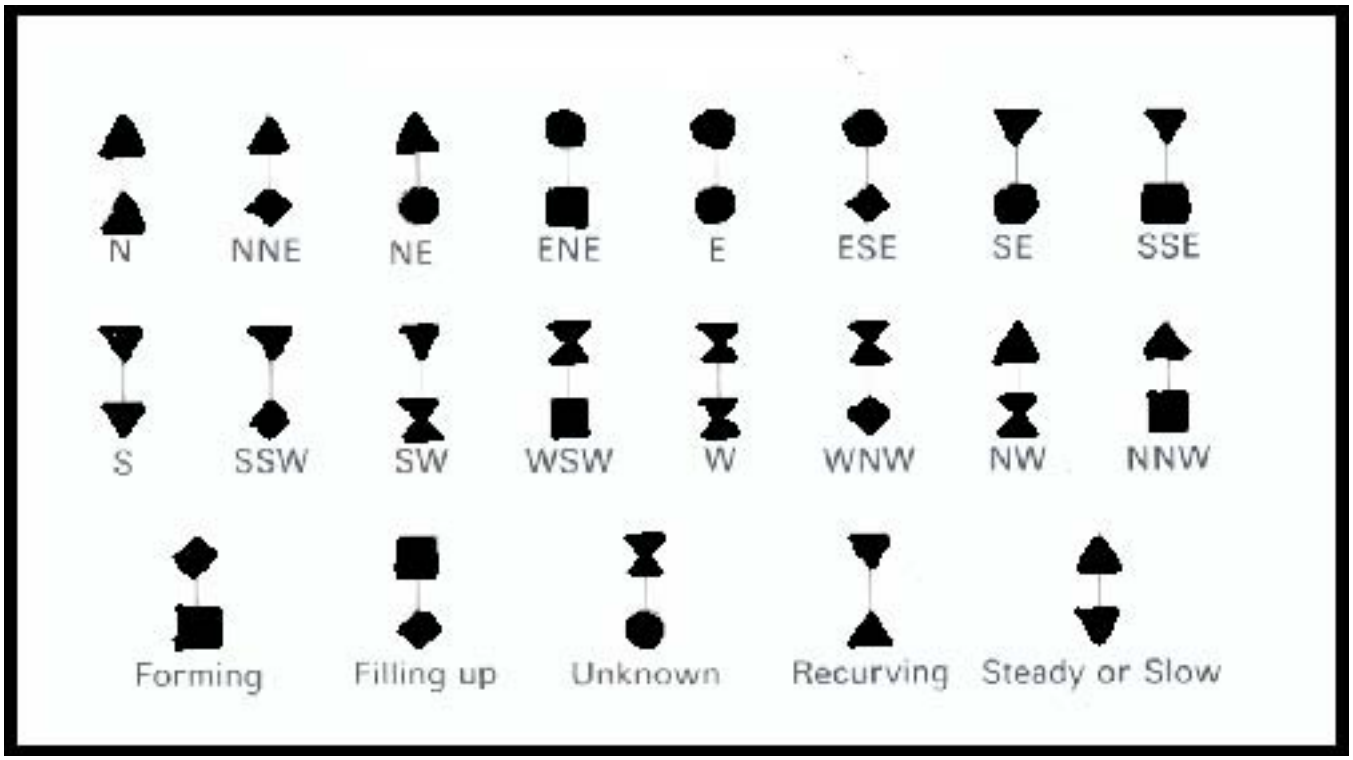


Table A—General Storm Signals (Day)—Direction of Movement Signals

General Storm Signals.—The signals are hoisted at the yardarm and masthead of the storm signal mast. The day symbols, which are normally painted red but may be painted white based on local conditions, and their code numbers, are shown in the graphic titled **General Storm Signals (Day)—Symbols and Location Codes**.

The day signals are, as follows:

1. Three symbols vertically disposed at one yardarm of the storm signal mast, read from the top down, indicate the number of the district in which the cyclonic center is situated. See the graphic titled **General Storm Signals (Day)—Symbols and Location Codes** for further information.

2. Two symbols on the opposite yardarm indicate the direction of movement of the storm center. See the table titled **Table A—General Storm Signals (Day)—Direction of Movement Signals** for further information.

3. The speed of movement of the storm center is shown by varying the distance between the two symbols from Table A and between the yardarm and the symbols. See the table titled **Table B—General Storm Signals (Day)—Speed of Movement Signals** for further information.

Table B—General Storm Signals (Day)—Speed of Movement Signals	
Signal (from Table A)	**Meaning**
Direction symbols separated by the normal distance	Moving in the indicated direction, speed not known

Table B—General Storm Signals (Day)—Speed of Movement Signals	
Signal (from Table A)	**Meaning**

Direction symbols separated by twice the normal distance	Moving in the indicated direction at 10 to 20 miles per hour
Twice the normal distance between the yardarm and the upper signal	Moving in the indicated direction at 20 to 30 miles per hour
Twice the normal distance between the yardarm and the upper signal and twice the normal distance between the signals	Moving in the indicated direction at over 30 miles per hour

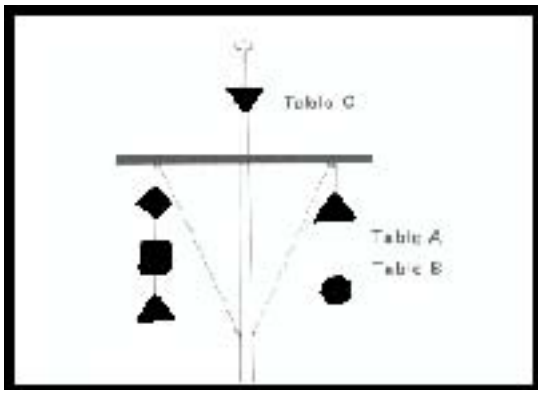
4. One symbol at the masthead indicates the time at which the storm center was located and the intensity of the storm. See the table titled **Table C—General Storm Signals (Day)—Time and Intensity Symbols** for further information.

Table C—General Storm Signals (Day)—Time and Intensity Signals		
Signal	**Intensity**	**Time**
Ball	Not indicated	0600 this morning

Table C—General Storm Signals (Day)—Time and Intensity Signals		
Signal	**Intensity**	**Time**
Triangle, point down	Violent	0600 this morning
Two triangles, points together	Not indicated	1200 today
Triangle, point up	Violent	1200 today
Diamond	Not indicated	1800 last night
Square	Violent	1800 last night

For example, the sample day signal shown below reads, as follows:

- At 0600 this morning, a violent typhoon (on the masthead, from Table C)
- in district 523 (on the left yardarm, from General Storm Signals (Day)—Symbols and Location Codes)
- was moving NE at a rate of 10 to 20 miles per hour (on the right yardarm, from Table A and Table B).



Sample Day Signal

The night signals are, as follows:

1. Three lights vertically disposed at one yardarm of the storm signal mast indicate the district in which the storm center is situated. See the graphic titled **General Storm Signals (Night)—Location Lights** for further information.

2. One light at the masthead indicates the subdivision of the district in which the storm center is situated. See the table titled **Table D—General Storm Signals (Night)—Subdivision Lights** for further information

Table D—General Storm Signals (Night)—Subdivision Lights	
Signal	**Direction**
White light	Quadrant I
Red light	Quadrant II
Green light	Quadrant III

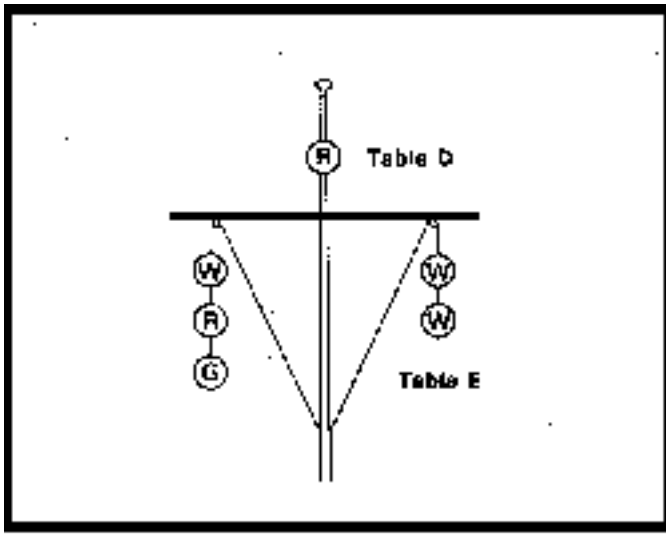
Table D—General Storm Signals (Night)—Subdivision Lights	
Signal	**Direction**
No light	Quadrant IV

3. Two lights vertically disposed at the opposite yardarm indicate the direction of movement for the storm center. See the table titled **Table E—General Storm Signals (Night)—Direction of Movement Lights** for further information.

Table E—General Storm Signals (Night)—Direction of Movement Lights	
Signal	**Direction**
Green light over white light	N
White light over red light	NE
White light over white light	E
Red light over red light	SE
Red light over green light	S
Red light over white light	SW
Green light over green light	W
White light over green light	NW

For example, the sample night signal shown below reads, as follows:

- A typhoon or cyclone in the district bounded by the parallels of 40˚N and 45˚N and the meridians of 140˚E and 145˚E (on the masthead, from Table D, and on the left yardarm, from General Storm Signals (Night)—Location Light)
- is moving E (on the right yardarm, from Table E).



Sample Night Signal

Local Storm Signals.—Local storm signals are displayed when the wind is expected to attain the force stated within the next 24 hours inside an area with a radius of 20 miles from the storm signal station.

Day signals normally consist wind force, wind direction, and change in wind direction signals. Wind force signals may sometimes be displayed alone.

Local Storm Signals—Day	
Signal	**Forecast**
Wind Force	
One ball	Force 6-7
One diamond	Force 8-11
One cross	Force 12 and above
Wind Direction	
One triangle, point up	From NW quadrant
One triangle, point down	From SW quadrant
Two triangles, vertically disposed, points up	From NE quadrant
Two triangles, vertically disposed, points down	From SE quadrant
Change in Wind Direction	
One cylinder	Wind will veer
Two cylinders, vertically disposed	Wind will back

At night, wind force and direction are indicated by red and white lights. There is not signal to indicate winds of force 6-7.

Local Storm Signals—Night	
Signal	**Forecast**
One white light	Force 8-11 from any quadrant
Two red lights, vertically disposed	Force 8-11 from the NW quadrant
Two white lights, vertically disposed	Force 8-11 from the SW quadrant
One red light over one white light	Force 8-11 from the NE quadrant
One white light over one red light	Force 8-11 from the SE quadrant
One red light	Force 12 and above from any direction

Special Weather Signals.—Special weather signals warn of abnormal conditions likely to cause damage. The day signals consist of colored drogues and cylinders; the night signals are given by lights.

Special Weather Signals		
Day signal	**Night signal**	**Meaning**
Red drogue	Two red lights, vertically disposed	Strong winds *
Blue drogue	Two blue lights, vertically disposed	Heavy rain *
Green drogue	Two green lights, vertically disposed	Heavy snow *
Red and blue drogue	One red light over one blue light	Wind and rainstorms *
Red and green drogue	One red light over one green light	Wind and snowstorms *
Red cylinder	Three red lights, vertically disposed	Rainstorms or snowstorms **
Blue cylinder	Three blue lights, vertically disposed	Heavy rainstorms or heavy snowstorms **
* Abnormal conditions likely to cause damage.		
**Abnormal conditions likely to cause excessive damage.		

Weather Forecast Signals.—At certain stations, signals are made to indicate the probable weather for the current day are hoisted at midnight and taken down at noon. At stations forecasting the weather for the following day, the signals are displayed from noon to noon.

The day signals are indicated, as follows:

1. Triangular flag—wind direction.
2. Square flag—weather conditions.
3. Long triangular flag—change in temperature.

Weather Forecast Signals (Day)	
Signal	**Meaning**
Wind Direction (triangular flag)	
White	Wind from N
White above green	Wind from NE
Green	Wind from E
Red above green	Wind from SE
Red	Wind from S
Red above blue	Wind from SW
Blue	Wind from W
White above red	Wind from NW
Weather Conditions (square flag)	
White	Fair
Red	Cloudy
Blue	Rain

Weather Forecast Signals (Day)	
Signal	**Meaning**
Green	Snow
White above red	Clear, occasional clouds
White above blue	Clear, occasional rain
White above green	Clear, occasional snow
Red above white	Clouds, occasional clear
Red above blue	Clouds, occasional rain
Red above green	Clouds, occasional snow
Blue above green	Rain or snow
White above green and blue	Clear, occasional rain or snow
Red above green and blue	Clouds, occasional rain or snow
Blue and green quarters	Fog
Change in Temperature (long triangular flag)	
White	Becoming colder or cooler
Red	Becoming hotter or warmer

The night signals are made by lights. The signals displayed from sunset until midnight refer to the following day; the signals displayed from midnight until sunrise refer to the same day.

Weather Forecast Signals (Night)	
Signal	**Meaning**
One white light	Clear
One orange light	Cloudy
One blue light	Rain
One green light	Snow
One white light over one orange light	Clear, cloudy later
One white light over one blue light	Clear, rain later
One white light over one green light	Clear, snow later
One orange light over one white light	Cloudy, clear later
One orange light over one blue light	Cloudy, rain later
One orange light over one green light	Cloudy, snow later
One blue light over one white light	Rain, clear later
One blue light over one orange light	Rain, cloudy later
One blue light over one green light	Rain, snow later
One green light over one white light	Snow, clear later
One green light over one orange light	Snow, cloudy later
One green light over one blue light	Snow, rain later

Tsunami Warning Signals.—Tsunami warning signals are, as follows:

1. Warning of tsunami threat—Single strokes on a bell.
2. Warning of weak tsunami—Double strokes on a bell.
3. Warning of large tsunami—Strokes on a bell in groups of three or blasts on a siren of about 5 seconds duration.
4. Dispersal of a tsunami—Single strokes on a bell alternating with double strokes on a bell.

Special Flags.—The following special flags are flown in Japanese waters:

1. Japanese Coast Guard (JCG) flag.—Blue square, with the white JCG emblem (compass star) in the center.
2. Department of Railways flag—White, with two red horizontal bands connected by a vertical red stripe. The upper band is shorter than the lower band and neither red band extends the whole length of the flag
3. Customs flag—Square, white and blue diagonal, with a red circle in the center.
4. Designation flag—Red square, with one white square in the middle of the upper edge and one white square in the middle of the lower edge.
5. Berthing flag—Yellow and red swallowtail.
6. Departing flag—Red and yellow triangle.

Time Zone

The Time Zone description is INDIA (-9). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in Japan are, as follows:

1. Kurushima Kaikyo. (Government of Japan)
2. Bisan Seto and approaches to Mizushima. (Government of Japan)
3. Akashi Kaikyo. (Government of Japan)
4. Irago Suido. (Government of Japan)
5. Uraga Suido. (Government of Japan)

Voluntary Traffic Separation Schemes

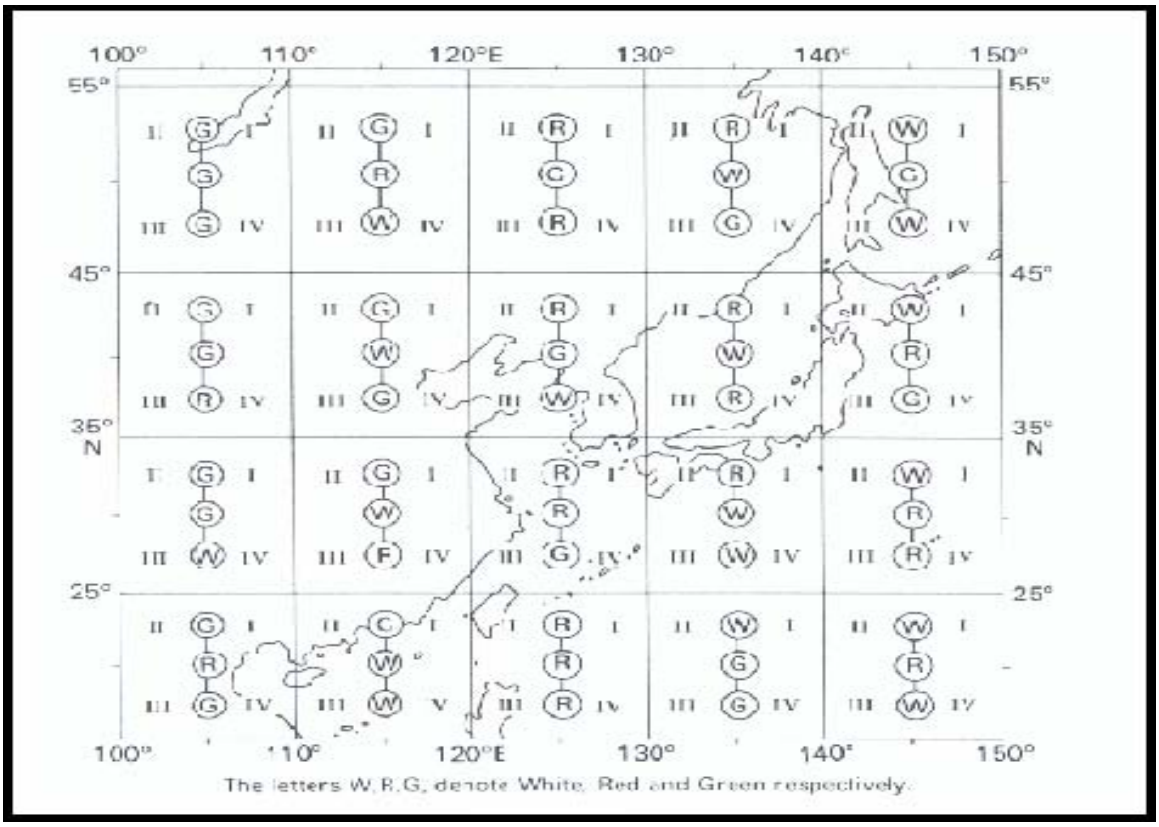
Voluntary traffic separation schemes have been established since 1985 in various locations in Japan by the Japanese Captains' Association (JCA). These schemes have been widely recognized by both Japanese and foreign shipping concerns and have contributed to the safe navigation of ships in the coastal waters of Japan.

Since these traffic separation schemes are a voluntary project of the JCA, they have no legal binding power. However, the JCA hopes that all ships will, as far as practicable, proceed into traffic separation schemes and follow all the rules and requirements by the traffic separation scheme, in line with the purpose for which these schemes have been established.

These schemes are located, as follows:

1. Off Turugi Saki (35˚08'N., 139˚41'E.).
2. Off Suno Saki (34˚58'N., 139˚46'E.).
3. Off O Shima (34˚44'N., 139˚24'E.).
4. Off Mikomoto Shima (34˚34'N., 138˚57'E.).
5. Off Daio Saki (34˚16'N., 136˚54'E.)
6. Off Shiono Misaki (33˚26'N., 135˚45'E.).
7. Off Hino Misaki (33˚53'N., 135˚04'E.).

Further information can be found in Pub. 158, Sailing Directions (Enroute) Japan Volume I (Scheme No. 1 through



General Storm Signals (Night)

Scheme No. 6) and Pub. 159, Sailing Directions (Enroute) Japan Volume II (Scheme No. 7).

Information can also be found on the Internet, as follows:

Japan Captains' Association Home Page

http://www.captain.or.jp

U.S. Embassy

The U.S. Embassy is situated at 1-10-5 Akasaka, Minato-Ku, Tokyo.

The mailing addresses are, as follows:

1. Japan address—
   1-10-5 Akasaka
   Minato-Ku
   Tokyo 107-8420

2. U. S. address—
   Box 205
   APO AP 96337-5004

U. S. Embassy Japan Home Page

http://tokyo.usembassy.gov

Vessel Traffic Service

Japanese Ship Reporting System (JASREP)

The JASREP has been established to assist in the coordination of Search and Rescue (SAR) operations in the sea area bounded by the mainland of Asia, the parallel of latitude 17˚N, and the meridian of longitude 165˚E. It is a voluntary system, in which all suitably equipped vessels are invited to participate.

Vessels send regular reports, through selected Coast Radio Stations (CRS), to a central agency in which a computer keeps a continuous record of the predicted position of each vessel.

Should an expected report not be received, SAR action may be initiated.

Type of Messages.—There are four types of message, each containing a selection of the items listed in the Form of Messages. Each comprises essential lines and such optional lines as thought necessary.

1. **Sailing Plan (SP)—**The SP should be sent when the vessel enters the area or leaves a port within the area. The report comprises lines A, B, E, F, G, I, L, M, V, X, and Y.
2. **Position Report (PR)—**A PR should be sent within 24 hours after departure from a port within the service area or within 24 hours of the previous position report. Vessels suffering from heavy weather or other stress should report more frequently; however, actual weather reports should not be sent through JASREP. The report comprises lines A, B, C, E, F, M, X, and Y.

3. **Deviation Report (DR)—**A DR should be sent when a vessels destination or intended route has been changed, or when the vessel is 25 miles or more from its expected position. The report comprises lines A andY, as well as any lines that have been changed.

4. **Final Report (FR)—**The FR is sent on leaving the service area, or on arrival at a port within the service area. The report comprises lines A, B, C, X, and Y.

Form of Messages.—The first line of a message is always:

JASREP/message type (SP, PR, DR, or FR)// and, in subsequent lines, strokes (/) are used to separate sub-items, with two strokes to mark the end of the line.

The following lines are essential in messages of one or more type:

A/Vessel's name/call sign//

B/Date and time[1] of departure or report//

C/Latitude/longitude[2]//

E/Present course, in degrees//

F/Estimated average speed[4]//

G/Port of departure/latitude/longitude[2, 3] //

I/Port of destination/latitude/longitude[2, 3] /ETA[1]//

K/Port of arrival/time[1] of arrival//

L/Navigation method: rhumb line (RL) or great circle (GC)/average speed[4]/latitude/longitude[2] //ETA[1]/name of place, if appropriate//(any number of "L" lines may be included, so as to define the route)

M/CRS being worked/next CRS//

V/Medical personnel on board: doctor (MD), paramedic (PA), NURSE, or NONE//

X/Up to 65 characters of amplifying comments//

Y/AMVER//(to be included in every message, if it is desired to participate in AMVER as well as JASREP)

1. Dates and times should be given in UT (GMT) and followed by "Z," thus 201420 Z for 1420 on the 20th.

2. Positions to be given as (4 digits) "N" or "S"/(5 digits) "E" or "W," e.g. 3435N/13948E.

3. Pilot boarding point.

4. Speed given in tenths of a knot, e.g. 135 for 13.5 knots.

Transmission of Messages.—Reports should be sent to a Japanese coast radio stations. The stations can be called on VHF channel 12, VHF channel 16, 2189.5 kHz, or F1B (DSC) The call sign for each station is "(Station Name) Sea Patrol Radio." Reports sent by these means are free of charge.

Reports can also be sent by telex to +72-2225193 JMSAHQ.

Operating Authority.—Enquiries about JASREP can be addressed to the following:

Mail:	Search and Rescue Division Guard and Rescue Department Japan Coast Guard 1-3 Kasumigaseki 2-chome Chiyoda-ku Tokyo 100-8989 Japan
Telephone:	81-3-3591-6361 extension 5920

KIRIBATI

General

Kiribati, an independent republic within the British Commonwealth is located in the Pacific Ocean, straddling the Equator and the International Date Line.

It consists of 33 coral atolls scattered across about 2 million square miles of the central and South Pacific Ocean. The three islands groups within the republic are the Gilbert Islands, the Phoenix Islands, and the Line Islands.

The Gilbert Islands consist of 16 atolls, lying approximately between 4˚N and 3˚S, and 172˚E and 177˚E. The islands in these groups are Little Makin, Butaritari, Marakei, in the Northern Gilbert Islands; Abaiang, Tarawa, Maiana, Abemama, Kuria, and Aranuka, in the Central Gilbert Islands; and Nonouti, Tabiteuea, Beru, Nikunau, Onotoa, Tamana, and Arorae, in the Southern Gilbert Islands.

The Phoenix Islands comprise a group of eight scattered atolls lying approximately between 2˚S and 5˚S, and 170˚W and 175˚W. These islands include Canton, Enderbury, Phoenix, Sydney, Birnie, McKean, Gardner, and Hull, with Canton jointly administered by Britain and the United States.

The Line Islands include the Line Group, which is a part of the Republic of Kiribati, together with the United States possessions of Palmyra Island and Jarvis Island. The islands extend as a scattered chain for about 1,200 miles in a SSE direction from Palmyra Island (5˚52'N., 162˚06'W.) to Flint Island. The group is divided into the Northern Line Group, consisting of Washington Island, Fanning Island, and Christmas Island (Kiritimati Atoll); the Central Line Group, consisting of Malden Island and Starbuk Island; and the Southern Line Group, consisting of Vostok Island, Caroline Island, and Flint Island.

The climate is tropical marine. It is hot and humid, with moderate trade winds.

The terrain is mostly low-lying coral atolls surrounded by extensive reefs.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

The E sides of the islands are steep-to and can be cleared by passing not less than 0.5 mile offshore. The W sides of the islands have submerged reefs and spits extending, in some cases, far offshore. At night, vessels should keep E of the islands.

Vessels should contact the Marine Superintendent at Tawara for the latest information on navigational aids prior to entering the channels or approaches to any anchorage is Kiribati.

Fish Aggregating Devices have been reported to exist among the islands in Kiribati.

Currency

The official unit of currency is the Australian dollar, consisting of 100 cents.

Government

Flag of Kiribati

Kiribati is a republic. The country is divided into six districts and 21 island councils

Kiribati is governed by a directly-elected President serving a 4-year term. The unicameral Parliament consists of 39 directly-elected members and three appointed members, all serving 4-year terms.

The capital is Bairiki on Tarawa.

Holidays

The following holidays are observed:

January 1	New Year's Day
March 8	Women's Day
Good Friday	Variable
Easter Monday	Variable
April 17	National Health Day
July 11-13	Independence Days
August 7	National Youth Day
December 10	Human Rights Day
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on fishing and handicrafts.

Languages

English is the official language. Gilbertese is the indigenous language.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Kiribati are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.

* Claims archipelagic status.

Search and Rescue

The Marine Division of the Ministry of Communications is responsible for coordinating search and rescue operations. Tawara Coast Radio Station (T3C) maintains a continuous listening watch on 500 kHz and 2182 kHz for distress traffic.

Time Zone

The Time Zone description is MIKE (-12) except for Christmas Island (Kiritimati Atoll), where the Time Zone description is KILO (-10). Daylight Savings Time is not observed.

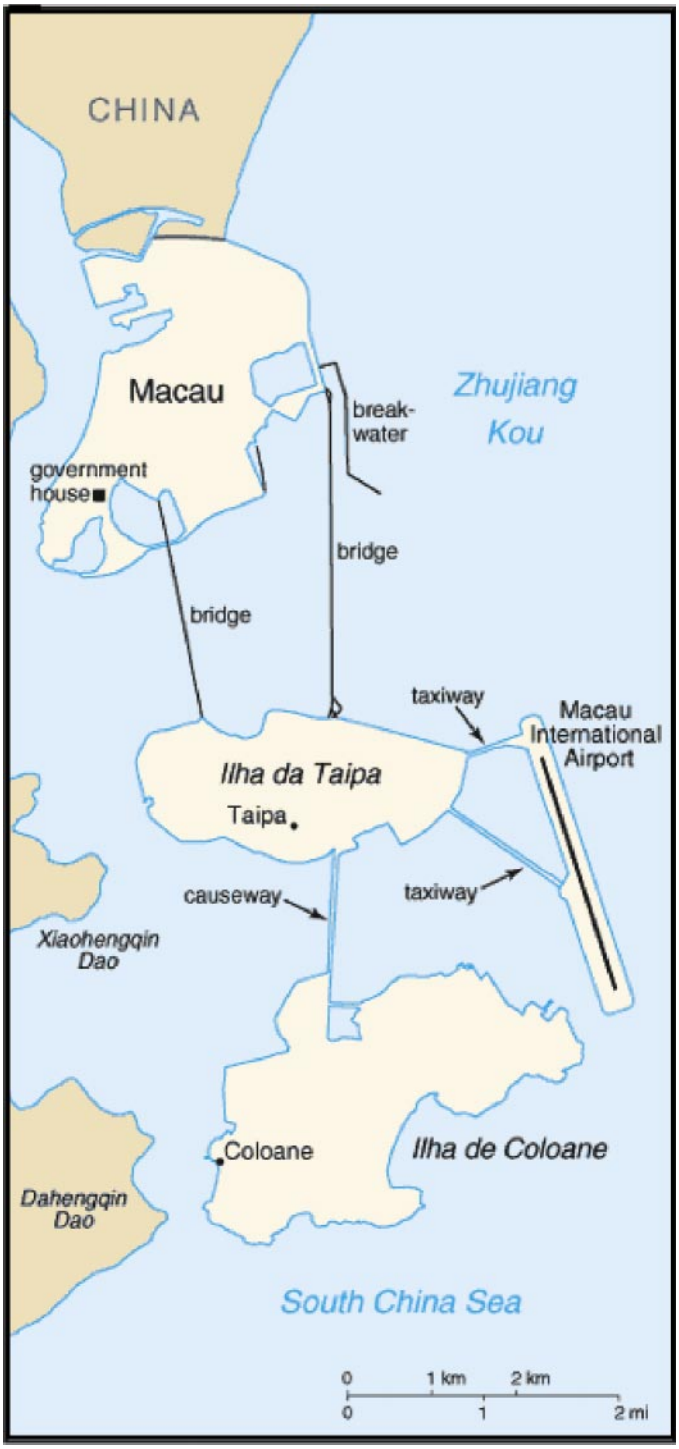
U.S. Embassy

The U.S. ambassador to Fiji is accredited to Kiribati.

The mailing address is 31 Loltus Street, P.O. Box 218, Suva, Fiji.

U. S. Embassy Fiji Home Page
http://suva.usembassy.gov

MACAU



General

Macau, a part of China, is located in Eastern Asia, bordering the South China Sea and China.

The climate is subtropical marine with cool winters and warm summers.

The terrain is generally flat.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The unit of currency is the pataca, consisting of 100 avos.

Government

Flag of Macau

Macau is a Special Administrative Region of the People's Republic of China. China has promised to respect the existing social and economic systems of Macau.

Macau is governed by a Chief Executive elected to a 5-year term by a special Election Committee. The unicameral Legislative Council consists of ten members indirectly elected by functional constituencies, ten directly-elected members, and seven members appointed by the Chief Executive; all members serve 4-year terms.

The legal system is based on Portuguese civil law.

Holidays

The following holidays are observed:

January 1	New Year's Day
Chinese New Years (3 days)	Variable
Ching Ming (Tomb Sweeping Day)	Variable
Good Friday	Variable
Holy Saturday	Variable
Easter Sunday	Variable
Easter Monday	Variable
May 1	Labor Day
Buddha's Birthday	Variable
Dragonboat Festival	Variable
Autumn Festival	Variable
October 1	National Day
November 1	All Saints' Day
December 8	Immaculate Conception
December 20	Macau Special Administrative Region Day
December 25	Christmas Day

Industries

The main industries are clothing, textiles, toys, plastic products, furniture, and tourism to include gambling.

Languages

Chinese and Portuguese are the official languages.

Navigational Information

Enroute Volume

Pub. 161, Sailing Directions (Enroute) South China Sea and Gulf of Thailand.

Maritime Claims

The maritime territorial claims of Macau are the same as for China, as follows:

Territorial Sea	200 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Shelf.

* Also considered a Security Zone.

** Claims right to create a Safety Zone around any structure in the Economic Zone, the right to require authorization to lay submarine cables and pipelines, and the right to broad powers to enforce laws in the Economic Zone.

Pilotage

Pilotage is compulsory. Special Regulations are in force for boarding pilots in Chinese waters. Additional information is found in Pub. 161, Sailing Directions (Enroute) South China Sea and the Gulf of Thailand.

Regulations

The following regulations are in force within the waters of Macau:

1. No vessel may anchor in any fairway or channel without the permission of the harbormaster.
2. Ships arriving in the province must be reported to the proper authorities within 24 hours of arrival.
3. Masters of all vessels shall notify the harbormaster of date and time for their proposed departure, and except in special circumstances such notification shall be made not less than 6 hours prior to sailing.
4. No rubbish, trash, or ashes shall be thrown overboard within the waters of the province.
5. No ballast, solid or liquid, shall be thrown or pumped overboard within the waters of the province.

A Traffic Separation Scheme for high speed vessels proceeding between Macau and Hong Kong has been estab-lished in the approaches to Zhu Jiang. The limits of the scheme are indicated by two lighted buoys.

Signals

Storm signals are displayed at Fortaleza de Guia (22˚12'N., 113˚33'E.) and from a station on the W side of Taipa; these signals conform to the storm signals displayed at Hong Kong. For further information on these signals, see Hong Kong—Signals.

Time Zone

The Time Zone description is HOTEL (-8). Daylight Savings Time is not observed.

U.S. Embassy

There are no U.S. diplomatic offices in Macau. The nearest U.S. Consul is situated in Hong Kong.

The Chief of Mission, Consul-General is situated at 26 Garden Road, Central, Hong Kong.

The mailing address is PSC 464, Box 30, FPO AP 96522-0002.

U. S. Consulate General Hong Kong and Macau Home Page
http://hongkong.usconsulate.gov

MALAYSIA

General

Malaysia consists of 11 states and one federal territory, located on the mainland (Malay Peninsula), and the states of Sabah and Sarawak, located on the island of Borneo. The two sections of the country are separated by the South China Sea and lie about 400 miles apart.

The mainland section of Malaysia is bounded on the N by Thailand and on the S by Singapore.

The island section is bounded on the S side by Indonesia (S part of Borneo) and Brunei lies about midway along its N coast.

The terrain consists of coastal plains rising to hills and mountains. Most of the central part of the Malay Peninsula is covered by dense tropical jungle.

The climate is tropical, with a Southwest Monsoon from April to October and a Northeast Monsoon from October to February.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart 1 for further IALA Buoyage System information.

Cautions

Fishing Devices

Fish aggregating devices are moored at a number of places off the E and W coasts of the Malay Peninsula. These devices lie in depths of up to 30m and are usually marked by buoys. Vessels should give then a wide berth.

Fish aggregating devices may also be encountered within a large area between 50 and 200 miles off the W coast of Sabah.

Rigs

Movable oil drilling rigs and production platforms may be encountered off the coasts of Malaysia and in open waters. Buoys associated with the drilling operations are frequently moored in the vicinity of these structures. The positions of these rigs and buoys are frequently changed and are generally promulgated by radio navigational warnings.

Piracy

It was reported (1995) that vessels have been attacked by armed thieves in the vicinity of the Strait of Malacca and Singapore Strait, mainly near Phillip Channel. These attacks were usually made from fast motor boats approaching from astern. Loaded vessels with low freeboard seem to be particularly vulnerable. Vessels with low freeboard transiting the Strait of Malacca often use security lights to guard against piracy. These lights by their brilliance may obscure the vessel's navigation lights. The International Maritime Bureau (IMB) of the International Chamber of Commerce has established a Piracy Countermeasures Center at Kuala Lumpur.

The center operates for the Southeast Asian Region and is able to receive reports from vessels concerning attacks and ad-

vise of danger areas. Piracy warnings originated by the Center will be broadcast daily to NAVAREA XI, VIII, and X through Enhanced Group Calling using the SafetyNET System.

For further details, the IMB Center can be contacted, as follows:

IMB Piracy Reporting Center
ICC International Maritime Bureau
P.O. Box 12559
50782 Kuala Lumpur
Malaysia
Telephone: +60-3-2031-0014
Facsimile: +60-3-2078-5769
Telex: +84-34199 (IMBPCI MA34199)
E-mail: imbkl@icc-ccs.org.uk

IMB Piracy Reporting Center Home Page

http://www.iccwbo.org/ccs/menu_imb_piracy.asp

Currency

The official unit of currency is the Malaysian ringgit, consisting of 100 sen.

Firing Areas

Most Malaysian firing and bombing practice areas are located off the W coast of Malaysia and are listed in Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

The following areas are used for firing or various training purposes off the E coast of Peninsular Malaysia and off the N coast of East Malaysia.

1. **Penor.—**Air to surface firing area bound by lines joining the following positions:
   a. 3˚42'N, 103˚23'E.
   b. 3˚39'N, 103˚26'E.
   c. 3˚36'N, 103˚22'E.
   d. 3˚39'N, 103˚19'E.
2. **Pulau Aur.—**A gunnery practice target, consisting of a group of four mooring buoys, lies about 2.25 miles S of Pulau Aur (2˚27'N., 104˚31'E.).
3. **Sarawak.—**Helicopter Training Area between the parallels 1˚45'N and 1˚35'N, and the meridians 110˚01'E and 110˚11'E.
4. **Labuan.—**Helicopter Training Area between the parallels 5˚15'N and 5˚48'N, and the meridians 115˚19'E and 115˚41'E.

Government

Malaysia is a constitutional monarchy. The country is divided into 13 states and three federal territories.

Malaysia is governed by a paramount ruler (King) elected by and from the hereditary rulers of the states for a 5-year term. The Prime Minister is the leader of the party who wins a plurality in legislative elections for the House of Representatives. The bicameral Parliament consists of a 69-member Senate (43 appointed by the King and 26 appointed by the state legislatures) and a 192-member directly-elected House of Representatives serving 5-year terms.

Flag of Malaysia

The legal system is mostly based on English common law.

The capital is Kuala Lumpur.

Holidays

The following holidays are observed:

January 1	New Year's Day (not observed in Johore, Kedah, Kelantan, Perlis, and Trengganu)
Chinese New Year	Variable
May 1	Labor Day
Wesak Day	Variable
First Saturday in June	King's Birthday
August 31	Independence Day
December 25	Christmas Day

Islamic holidays, which are subject to the appearance of the moon, include Eid Al-Fitr (End of Ramadan), Eid Al-Adha (End of Pilgrimage), Hijrah (Islamic New Year), Ashoora, and the Prophet's Birthday.

In addition, numerous local holidays, which vary from port to port, are also observed.

Industries

Major industries include the production and refining of crude oil and the production of liquefied natural gas.

Other principal industries include light manufacturing, electronics, tin, bauxite, iron ore, copper, rubber, timber, and palm oil processing. Livestock raising, fishing, shipping, and tourism are also important.

Agricultural crops include rubber, rice, palm oil, cocoa, tea, tobacco, fruits, coconut oil, and pepper.

Languages

Malay is the official language. Tamil, Chinese, and tribal dialects are also widely used. English is used in commerce, government, and secondary education.

Navigational Information

Enroute Volumes

Pub. 161, Sailing Directions (Enroute) South China Sea and Gulf of Thailand.

Pub. 174, Sailing Directions (Enroute) Strait of Malacca and Sumatera.

Maritime Claims

The maritime territorial claims of Malaysia are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Limit of Exploitation.

* Claims straight baselines. Prior authorization required for nuclear-powered vessels or vessels carrying nuclear material to enter the territorial sea.

Maritime Boundary Disputes

Indonesia asserts claims to Pulau Sipidan (4˚07'N., 118˚38'E.) and Pulau Ligitan (4˚10'N., 118˚53'E.), located on the E coast of Borneo, which were awarded to Malaysia in 1999 by the International Court of Justice.

Involved in a complex dispute with China, the Philippines, Taiwan, Vietnam, and possibly Brunei over the Spratly Islands (8˚38'N., 111˚55'E.). The 2002-issued *Declaration on the Conduct of Parties in the South China Sea* has eased tensions but falls short of a legally-binding code of conduct desired by several of the disputants.

A short section of the maritime boundary with Thailand at the mouth of the Sungai Kolok (6˚15'N., 102˚05'E.) remains in dispute.

A dispute with Singapore over Pedra Blanca (Pulau Batu Putih) (1˚20'N., 104˚24'E.) will be settled by arbitration.

In 2003, Malaysia and Brunei ceased oil and gas exploration in their offshore and deepwater sea beds. Negotiations are in progress over allocation of the disputed areas.

Pilotage

Pilotage for the ports of Peninsular Malaysia is reported compulsory. Standard signals are in use for requesting pilots.

Pilotage is optional for ports in Sarawak and Sabah, except at Miri.

Pilots for minor ports can be arranged through Kuching, provided sufficient notice is given.

When a pilot is available and a vessel requires his services, the standard flag and flashing light signals for requesting a pilot should be made.

A vessel arriving at night and not immediately requiring the services of a pilot, should display Flag G at daybreak.

Where the harbormaster acts as a pilot, prior notice should be given by the ship's agent.

Regulations

It has been reported (2002) that communications can be established between the offshore oil structures/rigs/platforms off Sabah and Sarawak and passing vessels on VHF channel 6 and 4400kHZ.

Search and Rescue

The Marine Department of the Malaysian Ministry of Transport is responsible for coordinating search and rescue operations.

Each Maritime Rescue Coordination Center (MRCC) and Maritime Rescue Coordination Subcenter (MRSC) maintains a continuous listening watch on 2182 kHz and VHF channel 16 for distress traffic. Penang Coast Radio Station (9MG) also maintains a continuous listening watch on 500 kHz, 2182 kHz, and VHF channel 16.

Each center can be contacted by e-mail, as listed in the accompanying table.

Signals

General

Signals are used within the limits of ports in Malaysia are given in the accompanying table.

Diving Operations

A vessel attending underwater swimmers or divers will display the following signals as a warning to proceed at reduced speed in the vicinity:

1. By day—A red flag with a white diagonal cross.
2. At night—A red light waved slowly from side to side.

Ammunition and Explosives

Vessels employed in dumping ammunition and other explosives at sea display the following signals:

1. By day—A red flag at a height of not less than 3.6m above the upper deck.
2. At night—A red flag at a height of not less than 3.6m above the upper deck.

These vessels should be given a wide berth.

Tide and Depth Signals

The following tide and depth signals are shown at ports in Sarawak with some variations:

1. From a position on the NE yardarm:
   a. One white ball—flood tide.
   b. One red ball—ebb tide.
2. From a position on the SW yardarm:
   a. Three white balls—2.1m or more on the bar.
   b. Two white balls—1.8m on the bar.
   c. One white ball—1.2m on the bar.
3. No signal—less than 1.2m on the bar.
4. At night, red and white lights are exhibited instead of red and white balls.

Tide and Berthing Signals

Tide signals are shown in some ports of Sabah, as follows:

1. A cone, point down indicates a flood stream.
2. A cone, point up indicates an ebb stream.
3. A ball indicates slack water.

Berthing signals are shown at some ports in Sabah which indicate assigned berths by flags and pennants.

Mariners should consult Pub. 163, Sailing Directions (Enroute) Borneo, Java, Sulawesi and Nusa Tenggara for further signal details.

Submarine Operating Areas

Submarine exercise areas are located, as follows:

a. 15 miles and 50 miles SE of Pulau Aur (2˚27'N., 104˚31'E.).

b. 22 miles NE of Pulau Tioman (2˚47'N., 104˚10'E.).

Time Zone

The Time Zone description is HOTEL (-8). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in Malaysia are, as follows:

1. **Sarawak—**Approaches to Bintulu Port. (Government of Malaysia)
2. **Strait of Malacca**
   a. At One Fathom Bank. (IMO adopted)
   b. Port Klang (Pelabuhan Klang) to Port Dickson. (IMO adopted)
   c. Port Dickson to Tanjung Keling. (IMO adopted)
   d. Melaka to Iyu Kecil. (IMO adopted)

Information on Traffic Separation Schemes off Malaysia which affect traffic using the Strait of Malacca can be found in Singapore—Traffic Separation Schemes.

U.S. Embassy

The U.S. Embassy is situated at 376 Jalan Tun Razak, 50400 Kuala Lumpur.

The mailing addresses are, as follows:

1. Malaysia address—
   P.O. Box 10035
   50400 Kuala Lumpur
2. U.S. address—
   American Embassy Kuala Lumpur
   APO AP 96535-8152

U. S. Embassy Malaysia Home Page
http://malaysia.usembassy.gov

Malaysia Port Signals

Day signals	Night signals	Meaning
A red flag	—	When displayed by a port service craft or buoytender—Indicates buoying, sweeping, or a diver down. Other vessel must keep well clear and reduce speed to dead slow when passing.
A red flag at both main yardarms	A red light at both main yardarms	When shown on a dredge—Indicates to keep well clear on either side
A black ball at the main yardarm and a red flag at the main yardarm	A white light at the main yardarm and a red light at the main yardarm	When shown on a dredge—Indicates to not pass on the side of the red flag or red light.

Note.—All lights, shapes and signals required by the Regulations for Preventing Collision at Sea, and all the flags and meanings of the International Code of Signals will be recognized within the port limits with the above modifications and additions.

Malaysia—MRCC and MRSC E-mail Addresses

MRCC Malaysia (MRCC Port Klang)	mrcc@marine.gov.my
MRSC Penang	mrsc_penang@marine.gov.my
Peninsular Malaysia	
MRSC Johor	mrsc_johor@marine.gov.my
MRSC Kuala Terengganu	mrsc_terengganu@marine.gov.my
Sabah and Sarawak	
MRSC Luban	mrsc_labuan@marine.gov.my
MRSC Sandakan	ppsdk@marine.gov.my
MRSC Kuching	mrsc_kuc@jls.gov.my

MARSHALL ISLANDS

General

The Marshall Islands, formerly part of the United States Trust Territory of the Pacific, consist of two parallel chains of coral atolls and reefs which lie in the North Pacific Ocean between 5˚N and 15˚N, and 162˚E and 173˚E. The chains are about 130 miles apart running generally NW to SE for some 800 miles.

The E chain is named the Ratak Chain (Sunrise Chain); the W chain is named the Ralik Chain (Sunset Chain).

The Marshall Islands archipelago consist of 31 coral atolls, 5 single islands, and numerous reefs of low coral formations with a combined land area of only about 68 square miles.

There are no high islands in the entire group. Most of the 28 island units are atolls with large lagoons and a varying number of encircling islets. The chief island is Jaluit.

The climate is hot and humid with the wet season from May to November. The islands border the typhoon belt.

The terrain is composed of low coral limestone and sand islands.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the United States dollar, consisting of 100 cents.

Firing Areas

Missile testing occurs in the waters within a circular area with a radius of 200 miles, centered on position 8˚43'N, 167˚43'E. Intermittent hazardous missile operations will be conducted within the area on a permanent basis.

Government

The Republic of the Marshall Islands has a constitutional government in free association with the United States. The country is divided into 33 municipalities.

The Marshall Islands is governed by a President elected by the Parliament to a 4-year term. The President selects the Cabinet from members of Parliament. The unicameral Parliament consists of 33 directly-elected members serving 4-year terms. A 12-member appointed Council of Chiefs consults and advises the government on matters affecting customary law and practice.

The legal system is based on adapted Trust Territory laws, acts of Parliament, and municipal, common, and customary law.

The capital is Majuro.

Flag of the Marshall Islands

Holidays

The following holidays are observed:

January 1	New Year's Day
January 2	Day after New Year's
March 1	Memorial Day
Good Friday	Variable
May 1	Constitution Day
July 4	Fisherman's Day
September 6	Dri-Jerbal Day
September 24	Manit Day
November 17	President's Day
December 4	Gospel Day (Komolol Day)
December 25	Christmas Day

Industries

The main industries are based on copra, fish, tourism; craft from shell, wood, and pearls; and offshore banking.

Languages

English is the official language. Two major Marshallese dialects from the Malayo-Polynesian family, as well as Japanese, are also spoken.

Mined Areas

Within Mili Atoll, the following passages on the N side of the atoll have been swept magnetically:

1. Takowa Channel (6˚14'N., 171˚48'E.).
2. Reiher Pass (6˚15'N., 171˚54'E.).
3. Acharan Passage (6˚14'N., 171˚56'E.).
4. Bue Passage (6˚13'N., 171˚58'E.).
5. Ennanlik Pass (6˚13'N., 172˚00'E.).
6. Northeast Pass (6˚11'N., 172˚05'E.).

Swept channels 0.3 mile wide extend from Takowa Channel and from Acharan Passage to the Mili Island Anchorage.

Proceeding into Wotje Atoll, swept channels have been established, as follows:

1. Meichen Channel.—Bounded by lines joining the following positions:
   a. 9˚22'52"N, 170˚04'05"E.
   b. 9˚23'02"N, 170˚03'17"E.
   c. 9˚24'52"N, 170˚02'46"E.
   d. 9˚25'28"N, 170˚07'44"E.
   e. 9˚23'20"N, 170˚04'26"E.
   f. 9˚23'45"N, 170˚04'07"E.
   g. 9˚24'42"N, 170˚04'17"E.
   h. 9˚25'00"N, 170˚07'13"E.
2. Shishmarev Channel.—Bounded by lines joining the following positions:
   a. 9˚23'45"N, 170˚06'12"E.
   b. 9˚24'27"N, 170˚06'35"E.
   c. 9˚28'22"N, 170˚10'40"E.
   d. 9˚28'43"N, 170˚13'35"E, then along the 5m curve to
   e. 9˚26'30"N, 170˚14'07"E.
   f. 9˚26'29"N, 170˚11'19"E.
   g. 9˚27'42"N, 170˚10'44"E.
   h. 9˚23'55"N, 170˚06'44"E.
3. Rurick Strait to Kaben Island and Goat Island.—Bounded by lines joining the following positions:
   a. 9˚27'52"N, 169˚49'30"E, then along the 5m curve to
   b. 9˚29'27"N, 169˚48'52"E.
   c. 9˚29'59"N, 169˚50'12"E.
   d. 9˚31'47"N, 169˚50'31"E then along the 5m curve to
   e. 9˚31'28"N, 169˚52'45"E.
   f. 9˚28'32"N, 169˚51'22"E.
   g. 9˚27'21"N, 169˚52'17"E.
   h. 9˚26'10"N, 169˚50'58"E, then along the 5m curve to
   i. 9˚27'44"N, 169˚49'48"E.

Within the above areas ships should veer anchor and submarines should not bottom due to the possible danger of detonating inactive mines.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of the Marshall Islands are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles
Fisheries or Economic Zone	200 miles.

* Claims archipelagic status.

Maritime Boundary Disputes

Claims U.S. territory of Wake Island (19˚17'N., 166˚36'E.).

Regulations

Special Provisions

Authorization is required for entry into islands in Kwajalein Atoll under military jurisdiction. Kwajalein Atoll is subject to local control by the Department of the Army. Information on entry requirements for Kwajalein Atoll can be found in Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Advisory Instructions

Kwajalein Test Site will coordinate safe passage for surface shipping through the area. All ships are should contact Kwajalein Control before entering an area with a radius of 200 miles from Kwajalein Atoll. Warnings of unauthorized entry into this area are broadcast on 2716 kHz.

Search and Rescue

Search and rescue operations are coordinated at Majuro and by the Maritime Rescue Coordination Center (MRCC) Honolulu.

Majuro Coast Radio Station (KUP65) maintains a continuous listening watch on 2182 kHz for distress traffic.

Time Zone

The Time Zone description is MIKE (-12), except for Ebon Atoll, where the Time Zone description is YANKEE (+12). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy for the Marshall Islands is situated at Oceanside, Mejen Weto, Long Island, Majuro.

The mailing address is P.O. Box 1379, Majuro, Republic of the Marshall Islands 96960-1379.

U. S. Embassy Marshall Islands Home Page
http://majuro.usembassy.gov

MEXICO

General

Mexico is located in Central America and borders the United States to the N and Belize and Guatemala to the S. The Caribbean Sea and Gulf of Mexico are the bodies of water to its E and the North Pacific Ocean lies to its W.

Mexico, with an area of 758,062 square miles, including the peninsula of Baja California, comprises one of the richest and most varied zones in the world. Its lengthy coastline measures 4,500 miles on the Pacific Coast.

The climate in the N is arid to semiarid and this section of the country tends to experience extremes in temperature. The S portion of Mexico and the Yucatan Peninsula are tropical climates and are generally humid.

The terrain is high, rugged mountains, low coastal plains, with high plateaus, and desert.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Mexican peso, consisting of 100 centavos.

Firing Areas

South of Isla de Guadalupe—Bounded by lines joining the following positions:

a. 28˚46'N, 118˚22'W.
b. 28˚46'N, 118˚12'W.
c. 28˚40'N, 118˚12'W.
d. 28˚40'N, 118˚22'W.

Northeast of Guaymas—Bounded by lines joining the following positions:

a. 28˚10.0'N, 111˚48.5'W.
b. 28˚16.0'N, 111˚39.0'W.
c. 28˚08.0'N, 111˚32.0'W.
d. 28˚02.0'N, 111˚42.0'W.

South of Isla Maria Cleofas—Bounded by lines joining the following positions:

a. 21˚04'N, 106˚09'W.
b. 21˚14'N, 106˚09'W.
c. 21˚14'N, 106˚23'W.
d. 21˚04'N, 106˚23'W.

Southeast of Puerto Arista:—Bounded by lines joining the following positions

a. 15˚46.2'N, 93˚40.0'W.
b. 15˚40.2'N, 93˚32.0'W.
c. 15˚35.5'N, 93˚35.7'W.
d. 15˚41.5'N, 93˚43.5'W.

Government

Flag of Mexico

Mexico is a constitutional republic. The country is divided into 31 states and a federal district.

Mexico is governed by a directly-elected President serving a non-renewable 6-year term. The bicameral General Congress consists of a 128-member Senate, 96 of which are directly elected and 32 elected under a system of proportional representation, serving 6-year terms, and a 500-member Chamber of Deputies, 300 of which are directly elected from single-member districts and 200 elected under a system of proportional representation, serving 3-year terms.

The legal system is based on a mixture of U.S. constitutional theory and civil law.

The capital is Mexico City.

Holidays

The following holidays are observed:

January 1	New Year's Day
February 5	Constitution Day
March 21	Benito Juarez's Birthday
Holy Thursday	Variable
Good Friday	Variable
May 1	Labor Day
May 5	Battle of Pueblo (Cinco de Mayo)
May 10	Mother's Day
September 1	State of the Nation Address
September 16	Independence Day
October 12	Columbus Day (Dia de la Raza)
November 2	All Souls' Day
November 20	Revolution Day
December 12	Virgin of Guadalupe Day
December 25	Christmas Day

Industries

The primary industries are tourism, tobacco, food and beverages, iron and steel, petroleum, textiles, clothing, and motor vehicles.

Languages

Spanish is the official language, but many dialects of Mayan are spoken.

Navigational Information

The maritime territorial claims of Mexico are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* No more than three foreign warships will be authorized in Mexican ports on each coast at the same time; no more than one will be in any given port. Port calls by more than one training vessel can be authorized only if permission is requested 3 months in advance. Nuclear-powered and nuclear-armed ships are not allowed to enter Mexican territorial waters or dock in Mexican ports.

Pilotage

Pilotage is compulsory for all vessels of 500 tons or more entering or departing a port in Mexico.

Regulations

All vessels will be boarded on arrival by a health official, the port captain, and a customs officer.

The maritime authorities will require arrival messages to include:

1. Last port clearance.
2. Passenger list.
3. Crew list.
4. Cargo manifest.
5. Deck log book.
6. Customs manifest to be stamped with a visa by a Mexican Consulate or Embassy.

On departure, vessels must submit:

1. Request for clearance.
2. List of passengers embarked.
3. Crew list and Articles of Agreement.
4. Stores list.

Search and Rescue

The Mexican Navy is responsible for coordinating search and rescue operations within the Exclusive Economic Zone of Mexico in the Pacific Ocean. The Maritime Rescue Coordination Center (MRCC) Mazatlan, which covers the Pacific Ocean, can be contacted by e-mail, as follows:

maritm@telecomm.net.mx

The following coast radio stations maintain a continuous listening watch on international distress frequencies:

1. Ensenada (XFE).
2. La Paz (XFK).
3. Guaymas (XFY).
4. Mazatlan (XFL).
5. Manzanillo (XFM).
6. Acapulco (XFA).
7. Salina Cruz (XFQ).

Time Zone

Mexico is covered by several time zones. Information is given in the accompanying table.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) on the W coast of Mexico are, as follows:

1. Approaches to Salina Cruz (IMO adopted).
2. Approaches to Manzanillo (Government of Mexico).

U.S. Embassy

The U.S. Embassy is situated at Paseo de la Reforma 305, Colonia Cuauhtemoc, Mexico City.

The mailing addresses are, as follows:

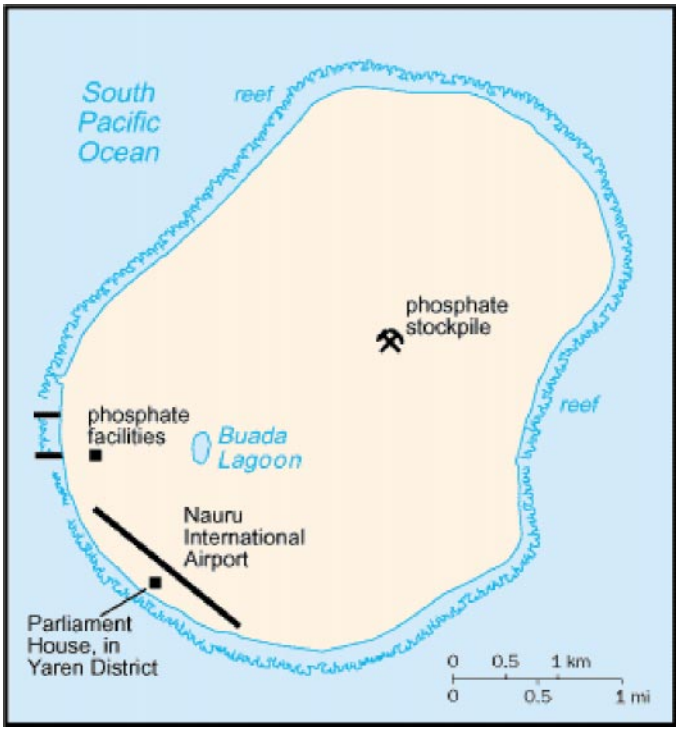
1. Mexico address—
   Paseo de la Reforma 305
   Colonia Cuauhtemoc
   06500 Mexico, D. F.
2. U.S. address—
   P.O. Box 9000
   Brownsville, TX 78520-9000

U. S. Embassy Mexico Home Page
http://mexico.usembassy.gov

Mexico—Time Zones

Location	Standard Time	Daylight Savings Time
All states except those listed below	SIERRA (+6)	ROMEO (+5) Maintained from the first Sunday in April until the last Sunday in October.
Baja California Sur, Nayarit, Sinaloa, and Chichuahua	TANGO (+7)	SIERRA (+6) Maintained from the first Sunday in April until the last Sunday in October.
Baja California Norte	UNIFORM (+8)	TANGO (+7) Maintained from the first Sunday in April until the last Sunday in October.
Sonora	TANGO (+7)	Not observed.

NAURU



General

Nauru is located in the South Pacific Ocean at 0˚32'S, 166˚56'E, S of the Marshall Island. It is the smallest republic in the world, with a land area of 21 square kilometers.

Nauru is one of the three great phosphate islands in the Pacific. The other two are Banaba, in the Gilbert group, and Makatea, in French Polynesia.

The climate is tropical with monsoons. The rainy season is from November to February.

The terrain consists of a sandy beach rising to a fertile ring around a coral reef with a phosphate plateau in the center.

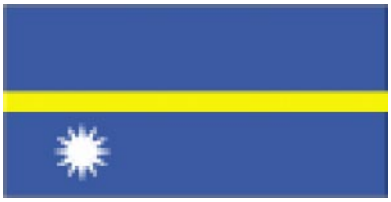
Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Australian dollar, consisting of 100 cents.

Government



Flag of Nauru

Nauru is an independent republic within the British Commonwealth. The country is divided into 14 districts.

Nauru is governed by a President is elected by the Parliament from among its own members for a 3-year term corresponding to that of Parliament. The unicameral Parliament consists of 18 directly-elected members serving 3-year terms.

The legal system is based on British common law and acts of the Parliament of Nauru.

Nauru has no capital city as such. Parliament House and other government offices are in Yaren District, on the ocean and opposite the airport.

Holidays

The following holidays are observed:

January 1	New Year's Day
January 31	Independence Day
Good Friday	Variable
Easter Sunday	Variable
Easter Monday	Variable
May 17	Constitution Day
October 26	Angam Day
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on phosphate mining, financial services, and coconut products.

Virtually everything must be imported, including fresh water, which is brought from Australia as ballast in the vessels that take the phosphate from Nauru. The government subsidizes all imports so that food and other necessities are available at a nominal cost.

Languages

Nauruan is the official language. English is widely spoken and used for most government and commercial purposes.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Nauru are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.

Search and Rescue

Nauru Coast Radio Station (C2N) maintains a listening watch on 2182 kHz and VHF channel 16 for distress traffic, but the watch is not continuous. It is recommended that vessels contact RCC Nadi on Fiji. For further information, see Fiji—Search and Rescue.

Search and rescue operations are coordinated by the Fiji National Search and Rescue Committee. For further information, see Fiji—Search and Rescue.

Time Zone

The Time Zone description is MIKE (-12). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Ambassador to Fiji is accredited to Nauru. The U.S. Embassy in Fiji is situated at 31 Loltus Street, Suva.

The mailing address is 31 Loltus Street, P.O. Box 218, Suva, Fiji.

U. S. Embassy Fiji Home Page
http://suva.usembassy.gov

NEW CALEDONIA

General

New Caledonia, an overseas territory of France, consists of the main island of New Caledonia, the archipelago Iles Loyaute, and numerous small sparsely-populated islets and atolls. It lies in the South Pacific Ocean, E of Australia between 19˚S and 23˚S, and 163˚E and 168˚E.

New Caledonia is almost completely surrounded by a barrier reef. The reef is usually very low or awash, but is below water in places. The distance the reef lies from land varies; it is normally 5 to 15 miles off the coast but can practically join the coast in places, especially for about 85 miles in the middle of the SW side of New Caledonia. Depths between the reef and the coast vary from 30 to 90m, with a bottom of hard rock or broken coral.

The climate is tropical and modified by SE trade winds. It is hot and humid.

The terrain is coastal plains with interior mountains. There are extensive coastal plains on the W coast but most of the E coast is barren and bordered by bare-sided cliffs.

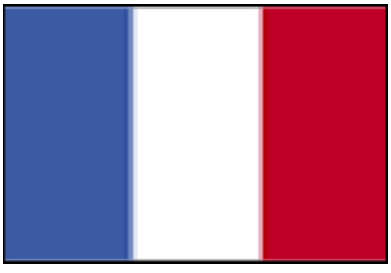
Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the CFP franc, consisting of 100 centimes.

Government



Flag of New Caledonia

New Caledonia is an overseas territory of France. The territory is divided into three provinces.

New Caledonia is governed by a French-appointed Governor assisted by a council of government chosen by the Territorial Assembly. The 54-member Territorial Assembly consists of the membership of the three Provincial Assemblies, whose members are directly elected to 5-year terms.

The capital is Noumea.

Holidays

The following holidays are observed:

January 1	New Year's Day
Easter Monday	Variable
May 1	Labor Day
May 8	1945 Victory Day
Ascension Day	Variable
Whitmonday	Variable
July 14	Bastille Day
August 15	Assumption Day
September 24	New Caledonia Day
November 1	All Saint's Day
November 11	Armistice Day
December 25	Christmas Day

Industries

The main industries are based on nickel mining and smelting. New Caledonia has large reserves of nickel, chrome, iron, cobalt, and manganese. Sizable quantities of mercury, copper, silver, lead, and gold have also been found.

Languages

French is the official language. Many other languages are spoken, reflecting different origins, such as various Melanesian, Vietnamese, and Polynesian dialects.

Mined Areas

West coast of New Caledonia.—Mines have been swept from Passe d'Yande (20˚05'S., 163˚46'E.), Passe de Poum (20˚15'S., 163˚53'E.), Passe de St. Vincent (22˚02'S., 165˚57'E.), and Passe de Uitoe (22˚10'S., 166˚07'E.). These areas are considered safe for navigation by surface vessels, but ships must not anchor nor submarines bottom, therein.

East approach to Noumea.—A line of mines extending from a point bearing 251˚, 0.42 mile distant from Pointe Est Reef Beacon (Woodin Canal), in a 251˚ direction for 0.92 mile, has been swept and is considered safe for surface navigation. Vessels should not anchor nor should submarines bottom in this area.

Approaches to Noumea.—Passe de Dumbea and the following areas inside the reefs in the approaches to Noumea have been swept and are considered free from mines. Vessels must not anchor nor submarines bottom in these areas, as follows:

1. Within Passe de Dumbea, lines joining the following positions with bearings and distances from the center of Ile Nge (22˚20'S., 166˚20'E.):
   a. 245˚, 4.6 miles.
   b. 279˚, 2.5 miles.
   c. 214˚, 1.8 miles.
   d. 222˚, 3.3 miles, then along the inner edge of Grand Recif Abore to
   e. 235˚, 4.1 miles.
2. An area enclosed by a line joining the following positions with bearings and distances from Recif Tabu Light (22˚29.0'S., 166˚27.5'E.):
   a. 229.0˚, 0.8 mile.
   b. 158.5˚, 1.1 miles.
   c. 029.0˚, 1.0 mile.
   d. 304.0˚, 1.5 miles.
   e. 257.0˚, 0.8 mile.
3. An area enclosed by a line joining the following positions with bearings and distances from Ile Amede Light (22˚28.8'S., 166˚28.6'E.):
   a. 032˚, 2.1 miles.
   b. 050˚, 3.1 miles.
   c. 050˚, 6.2 miles.
   d. 038˚, 6.2 miles.
   e. 013˚, 4.5 miles.
   f. 032˚, 2.7 miles.
4. An area enclosed by a line joining the following positions with bearings and distances from the summit of Ile Nde (22˚18.2'S., 166˚36.2'E.):
   a. 221.0˚, 5.6 miles.
   b. 204.0˚, 6.6 miles.
   c. 204.0˚, 2.0 miles.
   d. 249.5˚, 2.7 miles.
5. An area bound by lines joining the following positions relative to position 22˚12'06"S, 166˚19'30"E:
   a. 195.0˚, 5.7 miles.
   b. 191.0˚, 5.6 miles.
   c. 187.0˚, 5.4 miles.
   d. 160.5˚, 6.1 miles.
   e. 155.0˚, 4.7 miles.
   f. 172.0˚, 3.9 miles.
   g. 179.0˚, 2.7 miles.
   h. 177.0˚, 2.5 miles.
   i. 158.0˚, 3.7 miles.
   j. 150.0˚, 4.0 miles.
   k. 134.5˚, 3.4 miles.
   l. 141.0˚, 1.2 miles.
   m. 098.0˚, 0.9 mile.
6. In the vicinity of Senez Reef, a circle with a radius of 100m, centered on Beacon No. 5 (22˚17.7'S, 166˚19.5'E.).

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of New Caledonia are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	Depth of 200m or the Limit of Exploitation.

Maritime Boundary Disputes

Matthew Island (22˚21'S., 171˚21'E.) and Hunter Island (22˚24'S., 172˚05'E.) are claimed by Vanuatu and France.

Pilotage

Pilotage is compulsory for the following vessels within the waters of New Caledonia:

1. All foreign vessels regardless of their length.
2. All French vessels more than 60m in length.

French warships are exempt, as well as pleasure craft less than 60m in length.

Masters of pleasure craft less than 60m in length are advised to consider engaging the services of a pilot if unfamiliar with the area.

Vessels are required to remain at least 5 miles off the reefs while awaiting the pilot vessel, or in the absence of reefs, 5 miles from the territorial waters of New Caledonia.

Regulations

Reporting System (SURNAV)

The SURNAV system is intended to prevent accidental pollution in the territorial water of New Caledonia and the waters within 50 miles of the coast of New Caledonia. The regulations are mandatory and apply to vessels carrying hydrocarbons, including oil (as specified in Appendix 1 to Annex 1 of MARPOL 73) and vessels providing assistance to those vessels.

The reports, which should be sent to the Head of Marine in New Caledonia (CMN), are prefixed, as follows:

1. Inbound/outbound vessels—SURNAV-NOUMEA.
2. Accidents/assisting vessels—SURNAV-AVARIES.

The reports should be sent through a coast radio station. If the vessel is in the port of Noumea, the report should be sent through the Port Captain.

All vessels carrying hydrocarbons, including oil, either in transit or stationary with the territorial waters of New Caledonia, except when alongside in Noumea should maintain a continuous listening watch on VHF channel 16 and respond to calls by government vessels, Noumea Navy Radio (FUJ), or Noumea Coast Radio (FJP).

SURNAV messages are sent, as follows:

A. **Inbound and outbound vessels.—**Vessels carrying hydrocarbons, including oil, intending to enter the territorial limits of New Caledonia or its dependencies from sea or to depart from a port or anchorage in New Caledonia are required to send a message, the details of which are listed in the table below, to the CMN in Noumea 6 hours in advance.

Inbound and Outbound Vessels	
Designator	**Information required**
ALFA	Vessel's name, nationality, and call sign.
BRAVO	Destination.
CHARLIE	Cargo type (as specified in Appendix 1 to Annex 1 of MARPOL 73) and quantity.
DELTA	1. Date, time UT (GMT), and position of entering territorial waters. * 2. Date, time UT(GMT), and moored/anchored position within territorial waters. * * Whichever is appropriate.
ECHO	1. Date, time UT (GMT), and position of leaving territorial waters. * 2. Date and time UT (GMT), of arrival at destination (port, anchorage, waiting position, deballasting position) within territorial waters. * * Whichever is appropriate..
FOXTROT	Whether maneuvering capabilities are normal or reduced by damage to the following systems: 1. Propulsion machinery. 2. Control equipment. 3. Anchoring or mooring equipment. 4. Radar. 5. Radio equipment, especially regarding the ability to send SURNAV-NOUMEA message or to monitor VHF channel 16 when within territorial waters.

If the message cannot be sent as recommended above, the vessel shall ensure transmission by other means, including using VHF channel 16 as a last resort.

A correction message should be sent to SURNAV-NOUMEA if the vessel changes its intentions or if there is a change in its ability to maneuver and navigate.

B. **Accidents.—**Vessels carrying hydrocarbons, including oil, suffering a collision, stranding, or other navigational or serious incident within 50 miles of the territorial waters of New Caledonia should report the incident and include the details listed in the table below prefixed SURNAV-AVAIRES to the CMN at Noumea.

Accidents	
Designator	**Information required**
ALFA	Vessel's name, nationality, and call sign.

Accidents	
Designator	**Information required**
BRAVO	Date, time UT (GMT), and position.
CHARLIE	Course and speed.
DELTA	Cargo type (as specified by MARPOL 73) and quantity.
ECHO	Nature of damage or changes in the situation.
FOXTROT	Time UT (GMT) of call for assistance or towage.
GOLF	Whether assisting vessel, if present or its ETA (UT (GMT)).
HOTEL	Name and telegraphic address of owner, charterer, or consignee of cargo at Noumea.
JULIETT	Any other information.

This message does not constitute a request for rescue or assistance. If rescue or assistance is required, the vessel should inform the CMN.

Vessels should report any developments by means of a SURNAV-AVARIES message. A continuous listening watch should be maintained on VHF channel 16. The vessel should respond to any instructions received from the CMN.

C. **Vessels assisting another vessel**.—Any assisting vessel is required, immediately on responding to a call for assistance, to send a message, the details of which are listed in the table below, prefixed SURNAV-AVAIRES, to the CMN in Noumea.

Assisting Vessels	
Designator	**Information required**
ALFA	Vessel's name, nationality, and call sign of assisting vessel.
BRAVO	Date, time UT (GMT), and position of assisting vessel.
CHARLIE	Course and speed of assisting vessel.
DELTA	Name and telegraphic address of owner, charterer, or consignee of cargo at Noumea.
ECHO	Name, nationality, and call sign of casualty.
FOXTROT	Date and time UT (GMT) and position of casualty.
GOLF	Course and speed of casualty.
HOTEL	Damage to casualty, if known, or changes in the situation.
JULIETT	Any other information.

Vessels should report any developments by means of a SURNAV-AVARIES message. A continuous listening watch should be maintained on VHF channel 16. The vessel should respond to any instructions received from the CMN.

Restricted Area

Trawling and dredging are prohibited in the area bound by lines joining the following positions:

a. 23˚15'S, 167˚00'E.
b. 23˚15'S, 169˚00'E.
c. 25˚30'S, 169˚00'E.
d. 25˚30'S, 167˚00'E.

Rhinoceros Beetle Regulations

Every vessel arriving in New Caledonia or its dependencies from an area infested with rhinoceros beetles, which feeds on and destroys the heart of new growth shoots of the coconut palm, is required to anchor at least 400m offshore between sunset and sunrise with its holds closed until a sanitary inspection has been completed. If necessary, disinfestation will be carried out before a vessel is permitted to berth alongside.

The areas regarded by French authorities as infested are, as follows:

1. Bismarck Archipelago.
2. Cuba.
3. Dominican Republic.
4. Fiji.
5. Haiti.
6. Indonesia.
7. Irian Jaya (Manokwari, Sarmi, and Sorenarwa).
8. Japan.
9. Palau.
10. Philippines.
11. Puerto Rico.
12. Samoa.
13. Taiwan.
14. Tonga.
15. Wallis and Futuna.

Search and Rescue

Noumea Coast Radio (FJP) maintains a continuous listening watch on VHF channel 16.

The Maritime Rescue Coordination Center (MRCC) Noumea can be contacted by e-mail, as follows:

mrcc.nc@lagoon.nc

Signals

The following storm signals may displayed:

1. One black ball—Port threatened by a storm with a mean wind speed possibly reaching 33 knots or over, with an E component.
2. Two black balls—Port area threatened by a storm with a mean wind speed reaching 33 knots or over, with a W component.

Time Zone

The Time Zone description is LIMA (-11). Daylight Savings Time is not observed.

U.S. Embassy

There is no U.S. diplomatic representation. New Caledonia is an overseas territory of France.

NEW ZEALAND

General

New Zealand is located in the Southwest Pacific Ocean about 1,200 miles SE of Australia. There are three principal islands, North Island, South Island, and Stewart Island, are located between 34˚30'S and 47˚30'S, and 166˚30'E and 178˚45'E.

The Chatham Islands, which lie between 43˚30'S and 44˚30'S, and 175˚45'W and 177˚W, are also considered part of New Zealand proper.

The minor islands included within the geographical boundaries of New Zealand are the Kermadec Islands, lying between 29˚10'S and 31˚30'S, and 177˚45'W and 179˚W; the Bounty Islands (47˚42'S., 179˚03'E.); the Antipodes Islands (49˚41'S., 178˚50'E.); the Auckland Islands (50˚45'S., 166˚00'E.); and Campbell Island (52˚32'S., 169˚10'E.).

The climate is temperate with sharp regional contrasts. The terrain is predominately mountainous with some large coastal plains.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

High Speed Ferries

High speed ferries operate in New Zealand, especially in Cook Strait. Vessels are advised to maintain a good lookout.

Swells

Mariners are cautioned that certain meteorological conditions may generate swells which can significantly reduce a vessel's underkeel clearance in the approaches to some New Zealand ports. These swells may be generated from any or all of the following:

1. Long period swells, with amplitudes up to 0.5m and a period up to 20 minutes.
2. Infragravity waves, generated by the interaction between swells, with amplitudes up to 1.5m and a period of several minutes.
3. Rissages (meteorological tsunamis) generated by fast-moving atmospheric pressure systems.

The generation of such swells is particularly likely when a deep depression situated E of New Zealand moves quickly to the SE. Ports on the E coast of New Zealand which are exposed to swells from S through E are particularly susceptible to swell effects. These areas are, as follows:

1. Approaches to Port Taranaki.
2. Approaches to Whangarei Harbor.
3. Approaches to Gisborne.
4. Approaches to Napier.
5. Approaches to Wellington.
6. Approaches to Lyttelton.
7. Approaches to Timaru.
8. Approaches to Otago Harbor.
9. Foveaux Strait.

Currency

The official unit of currency is the New Zealand dollar, consisting of 100 cents.

Firing Areas

Firing and bombing practices and defense exercises take place intermittently in a number of areas off the coast of New Zealand.

In view of the responsibilities of range authorities to avoid accidents, limits of practice areas are not shown on the chart and descriptions of these areas do not appear in the Sailing Directions. Such range beacons, lights, and marking buoys as may be of assistance to the mariner, or targets which might be a danger to navigation, will however be shown on charts and, when appropriate, mentioned in the Sailing Directions.

The principal types of practices carried out are listed in the accompanying table.

For the information of ships at sea, warnings of practices will be notified by:

1. The broadcast of VHF and R/T messages which will be promulgated during evening and morning transmission times (NZST) before any practice takes place.
2. New Zealand Notices to Mariners, if practices are to be of long duration, i.e., 7 days or more.
3. Additional warnings of Army live-shell practices only will be notified by advertisement in a newspaper or newspapers within the port concerned not less than 24 hours before a practice begins and by the regional YA broadcast station for the port concerned not less than 12 hours before any practice.
4. In addition to 1 above, for all firings in the New Zealand area, whether in prescribed areas or not, firing warnings are to be passed on R/T (2182 kHz and VHF channel 16), 5 minutes prior to the commencement of live firing, every 30 minutes thereafter, and immediately on completion of firings. The nature of the broadcast will be "... I am about to commence gunnery practice ..." or "... I have completed gunnery practice ..."

Prefixes.—The meanings of the prefixes to the designated firing areas are, as follows:

R Restricted Area—area where certain restrictions apply to aircraft operations
D Danger Area—area where dangers may be present, e.g. firings.
M Military Operational Area—area where military operations, including firings, may take place.

Notification.—Warnings will not be issued in respect of exercise areas M103 and M304, as these areas are to be considered in continual use.

In order to promulgate the danger areas radio warnings will generally read in the following form, for example: "Coastal Navigational Warning No. 23 begins Weapons Practice Hauraki Gulf area November 23 from 1000 to 1400 NZDT/NZST Danger Area M109 ends."

Be advised that warnings may be promulgated in Notice to Mariners.

Warning Signals.—These consist of a large red flag by day and a red fixed light at night. The absence of any such signal cannot, however, be accepted as evidence that a practice area does not exist.

Warning signals are shown from 30 minutes before practice commences until it closes.

Ships and aircraft carrying out night exercises may illuminate with white, green, or red flares.

The range authorities are responsible for ensuring that there should be no risk of damage from falling shell splinters, or bullets to any vessel which may be in a practice area.

If a vessel in an area where practice is in progress, it should maintain course and speed, but, if it is prevented from doing this for navigational reasons, it should endeavor to clear the area at the earliest possible moment.

Practices will not normally take place while a vessel is in a danger area, but the area must be cleared as soon as possible after the warning signal has been shown.

New Zealand—Information on Firing Areas

Type	Description	Remarks
a. Air to ground or air to sea.	Bombing practice from aircraft at ground targets or aircraft firing at towed or stationary targets on sea or land.	Warning signals are usually shown. Firing takes place to seaward of land targets. All marine craft operating as range safety craft or targets will display, for identification purposes, while in the vicinity of the danger area by day, a large red flag at the masthead.
b. Sea or ground to air.	Anti-aircraft firing from shore batteries or ships from AA guns or machine guns at a target towed by aircraft as in a(ii) above, or at balloons.	Ships show a red flag by day; a night signal is not shown.
c. Air to air.	Aircraft fire at a large white or red sleeve or flag (which may be illuminated by a bright white light) towed by another aircraft moving on a steady course.	
d. Ground to sea or sea to ground.	Firing from shore batteries or ships at fixed or floating targets.	
e. Rocket or guided weapons firing.	May be a, b, c, or d above.	All such firings under Clear (Air and Sea) Range procedures. Devices are generally incorporated whereby the missiles may be destroyed should their flight be erratic. Ships show a red flag by day; a night signal is not shown.

New Zealand Danger Areas

No.	Area	Activity	Chartlet No.
M102	**Bay of Islands (Northland)**.—An area bound by lines joining the following positions: a. 34˚30.0'S, 174˚50.0'E. b. 35˚00.0'S, 174˚50.0'E. c. 35˚00.0'S, 174˚15.0'E. d. 34˚30.0'S, 174˚15.0'E.	Naval firing.	1
M103	**South Head (Northland).**—An area bound by a circle 3 miles in radius from position 36˚28.65'S, 174˚09.64'E.	Air firing and bombing.	2

New Zealand Danger Areas			
No.	**Area**	**Activity**	**Chartlet No.**
M106	**Kaipara (Northland)**.—An area bound by lines joining the following positions: a. 36˚21.05'S, 174˚18.13'E. b. 36˚32.62'S, 174˚20.83'E. c. then the arc of a circle with a radius of 20 miles centered on position 36˚47.21'S, 174˚37.87'E. in a counterclockwise direction from position b to position d d. 36˚36.88'S, 174˚16.56'E. e. 36˚38.00'S, 175˚09.00'E. f. 36˚33.00'S, 173˚58.00'E. g. 36˚20.10'S, 174˚01.00'E. h. 36˚18.65'S, 174˚09.77'E. i. 36˚21.05'S, 174˚18.13'E.	Military aircraft maneuvers.	2
M203	**Bay of Plenty**.—An area bound by lines joining the following positions: a. 35˚20.0'S, 178˚10.0'E. b. 37˚20.0'S, 178˚10.0'E. c. 37˚20.0'S, 176˚25.0'E. d. 35˚50.0'S, 176˚25.0'E. e. 35˚50.0'S, 175˚50.0'E. f. 35˚20.0'S, 176˚25.0'E.	Naval firing.	1
M204	**Bay of Plenty (Cuvier Island)**.—An area bound by lines joining the following positions: a. 35˚50.0'S, 176˚25.0'E. b. 36˚20.0'S, 176˚25.0'E. c. 36˚20.0'S, 175˚50.0'E. d. 35˚50.0'S, 175˚50.0'E.	Naval firing.	1
M304	**Ruamai (Manawatu)**.—An area bound by a circle 4 miles in radius from position 40˚12.23'S, 175˚13.49'E to seaward of the coastline.	Air bombing and air-to-surface firing.	3
M308	**Tangimoana (Manawatu Coast)**.—An area bound by lines joining the following positions: a. 40˚04.44'S, 175˚03.85'E. b. 40˚34.58'S, 175˚07.87'E. c. 40˚34.18'S, 174˚52.04'E. d. 40˚04.02'S, 174˚48.14'E.	Air to air firings.	3
M504	**Wairarapa Coast (North Island)**.—An area bound by lines joining the following positions: a. 40˚25.78'S, 178˚02.18'E. b. 41˚02.07'S, 177˚18.84'E. c. 40˚42.74'S, 176˚50.46'E. d. 40˚06.30'S, 177˚33.86'E.	Air gunnery, surface-to-air and surface-to-surface firings, ship and submarine exercises.	1

New Zealand Danger Areas			
No.	**Area**	**Activity**	**Chartlet No.**
D125	**Tiritiri Matangi (Hauraki Gulf).**—An area bound by lines joining the following positions: a. 36˚30.00'S, 174˚57.00'E. b. 36˚35.00'S, 174˚57.00'E. c. 36˚35.30'S, 174˚51.30'E. d. 36˚34.35'S, 174˚51.30'E. e. 36˚34.35'S, 174˚49.00'E. f. 36˚30.00'S, 174˚49.00'E.	Surface to air and surface to surface firings.	2
D126	**Whangapararaoa (Hauraki Gulf).**—An area bound by lines joining the following positions: a. 36˚36.58'S, 174˚51.50'E. b. 36˚36.58'S, 174˚50.28'E. c. then a line from position b along the mean high water line to position 36˚35.70'S, 174˚49.00'E. d. 36˚34.58'S, 174˚49.00'E. e. 36˚34.58'S, 174˚51.50'E.	Small arms firing and explosives.	2

Clear Range Procedures.—The following limits are used by RNZAF crews engaged in dropping live weapons:

1. The dropping area is reported to be at least 30 miles (15-mile limit used for practice weapons) from the nearest land. Outside the 100m line and at least 20 miles (10-mile limit used for practice weapons) from all shipping.
2. The visibility is to be over 5 miles and all attacks are to be made from below cloud base. The target is to be visible at the time of the drop.
3. The area through which and into which any weapon will pass or fall is to be clear of all air and sea traffic.

Ordnance brought to surface.—Fisherman operating in the vicinity of firing practice and exercise areas may occasionally bring unexploded missiles or portions of them to the surface in their nets or trawls.

These objects may be dangerous and should be treated with great circumspection and jettisoned immediately (fixing the position, if possible), with no attempt being made to tamper with them or bring them back for inspection by naval authorities.

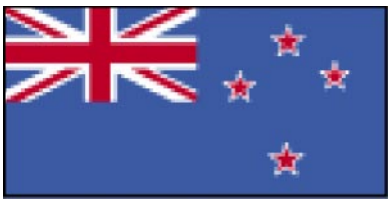
Further information.—Full details of New Zealand firing areas (military operating areas) can be found on the New Zealand Civil Aviation Authority web site.

New Zealand Civil Aviation Authority Home Page
http://www.caa.govt.nz

Fishing Areas

Except for an area on the E side of South Island extending about 35 miles SSW from the Kaikoura Peninsula (42˚26'S., 173˚43'E.), fishing is conducted in all waters around New Zealand, including the offshore islands, as well as around the Auckland Islands (50˚45'S., 166˚05'E.) and the Campbell Islands (52˚32'S., 169˚11'E.). In places, these activities may extend a considerable distance from the coast.

Government



Flag of New Zealand

New Zealand is a parliamentary democratic system of government, closely patterned on that of the United Kingdom and is a fully independent member of the British Commonwealth of Nations. The country is divided into 13 regions.

Queen Elizabeth II is the sovereign and Chief of State, represented in New Zealand by a Governor General. The Prime Mi ister is appointed by the Governor General. The unicameral 120-member House of Representatives consists of 69 directly-elected members and 51 members chosen by proportional representation, all serving 3-year terms.

The legal system is based on english common law.

The capital is Wellington.

Holidays

The following holidays are observed:

January 1-2	New Year's Days

Third Monday in January	Southland Day
Fourth Monday in January	Wellington Day
Last Monday in January	Auckland and Northland Day
Last Monday in January or First Monday in February	Nelson Day
February 6	Waitangi Day (New Zealand Day)
Second Monday in March	Taranaki Day
Third Monday in March	Otago Day
Good Friday	Variable
Easter Sunday	Variable
Easter Monday	Variable
April 25	ANZAC Day
First Monday in June	Queen's Birthday
Last Monday in September	Canterbury Day (South)
Third Friday in October	Hawkes' Bay Day
Fourth Monday in October	Labor Day
Last Monday in October	Marlborough Day
Second or Third Friday in November	Canterbury Day (North and Central)
Last Monday in November	Chatham Islands Day
First Monday in December	Westland Day
December 25	Christmas Day
December 26	Boxing Day

Note.—New Zealand holidays falling on a Saturday or Sunday may be observed the following Monday.

Industries

The main industries are based on food processing, wood and paper products, textiles, machinery, transportation equipment, banking and insurance, tourism, and mining.

Languages

English is the official language.

Mined Areas

Danger Areas

Before the present regulations establishing five ammunition dumping areas in over 600m were brought into force, it was the practice to dump ammunition in any suitable area off the New Zealand coast adjacent to the loading point providing the depth was greater than 200m. These areas, which are best seen on the chart, are defined as being within a radius of 5 miles centered on the following positions:

a. 34˚40'S, 174˚50'E.
b. 36˚28'S, 176˚20'E.
c. 41˚44'S, 175˚01'E.
d. 43˚15'S, 174˚00'E.
e. 46˚00'S, 171˚13'E.

Ammunition has been found inside the 200m curve, especially in the Hauraki Gulf area, and in the waters around the Hen and Chicken Islands (35˚55'S., 174˚45'E.).

The area within 0.5 mile of the shores of the Hen and Chicken Islands is potentially dangerous.

A disused explosives dumping ground centered on position 36˚38'S, 174˚57'E exists in Hauraki Gulf between Tiritiri Matangi Island and The Noises.

Navigational Information

Enroute Volume

Pub. 127, Sailing Directions (Enroute) East Coast of Australia and New Zealand.

Maritime Claims

The maritime territorial claims of New Zealand are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* Prohibits entry of nuclear-powered ships or ships carrying nuclear material.

Pilotage

Pilotage is compulsory for merchant vessels, other than those exempted, at the ports of Auckland, Bluff, Gisborne, Lyttelton, Napier, Nelson, Otago, Opua, Tauranga, Picton, Port Taranaki, Timaru, Wanganui, Wellington, Westport, and Whangarei. Pilotage is also compulsory at Taharoa and Waverley offshore terminals. At other ports pilotage is not compulsory and pilots only board vessels when signaled.

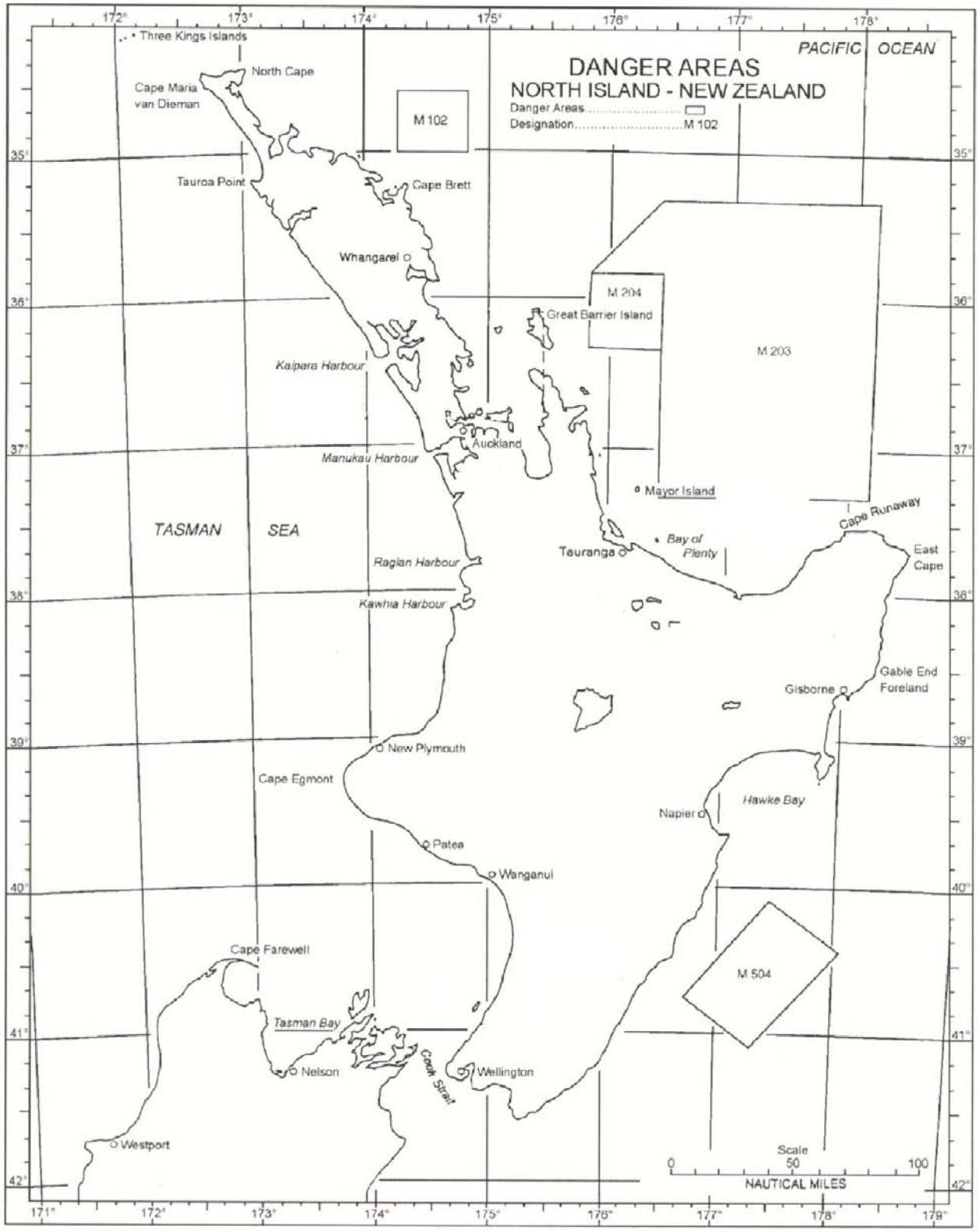
Pollution

Ballast Water

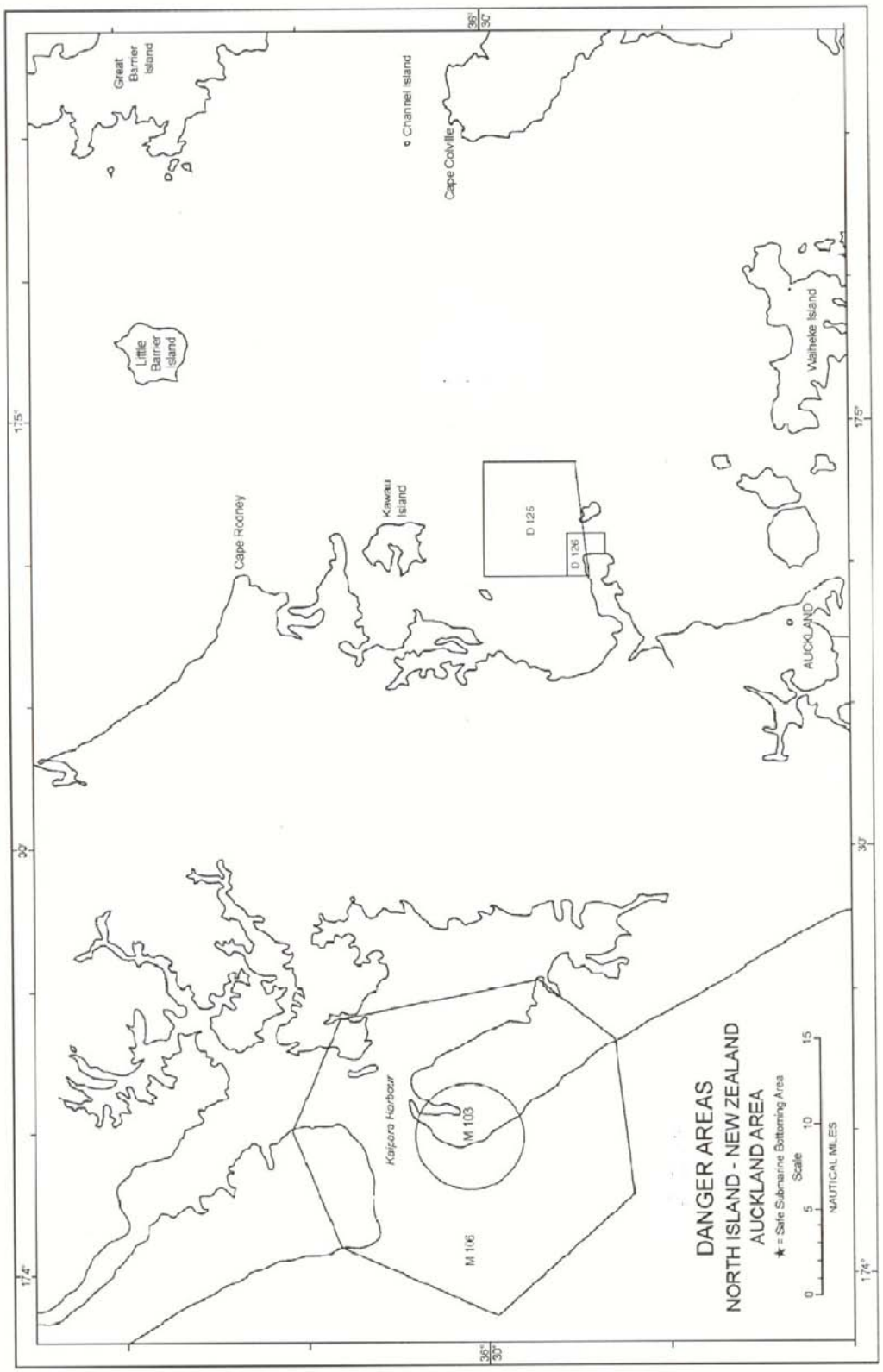
Ballast water must not be discharged within 12 miles of the coast of New Zealand without the permission of the New Zealand Quarantine Officer.

Voluntary Code

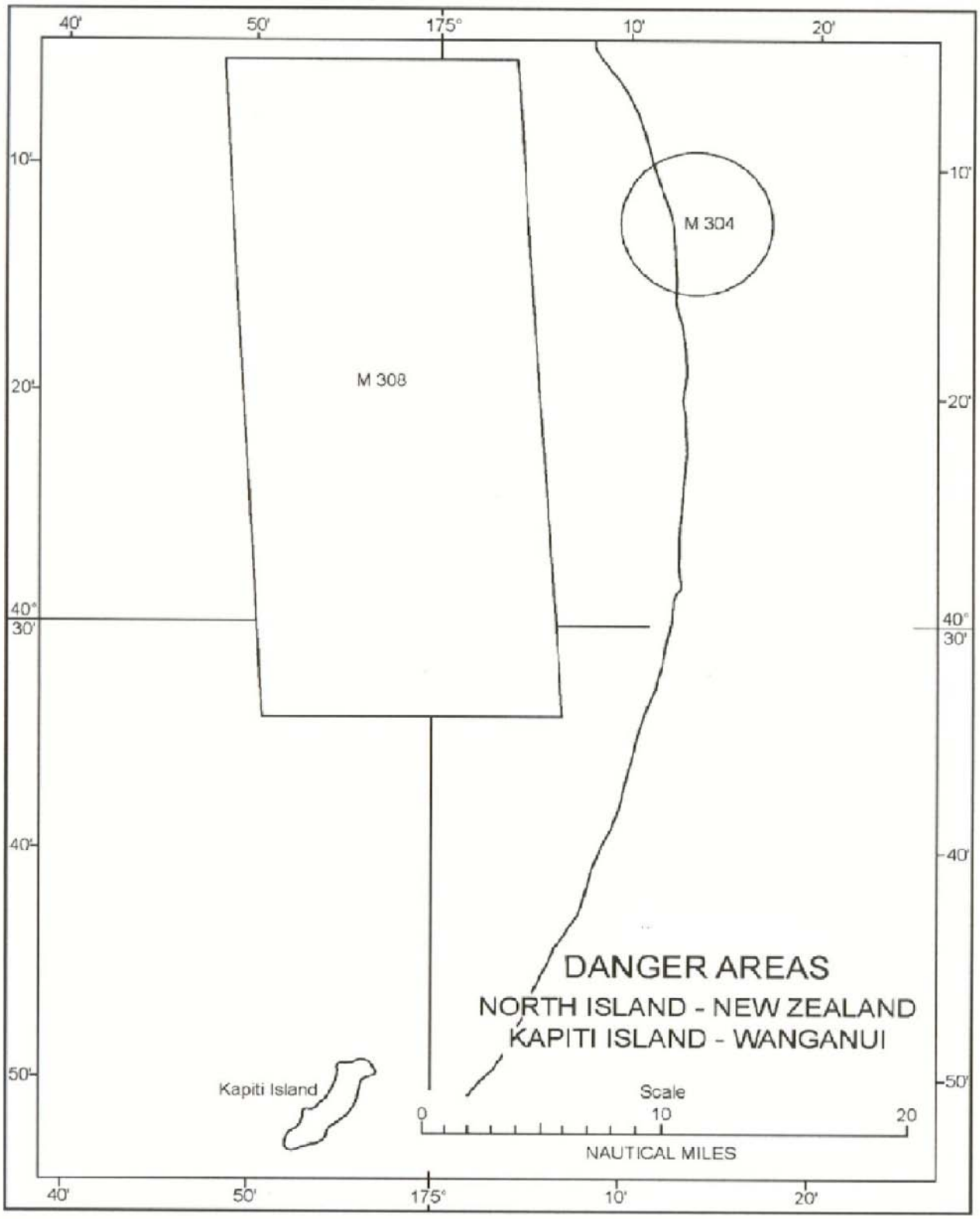
A Voluntary Code has been introduced to reduce the potential for the pollution of the marine environment around New Zealand's coast. For further information, see Regulations—Shipping Routes.


DANGER AREAS
NORTH ISLAND - NEW ZEALAND
Danger Areas
Designation M 102
PACIFIC OCEAN
TASMAN SEA
Three Kings Islands
North Cape
Cape Maria van Diemen
M 102
Tauroa Point
Cape Brett
Whangarei
M 204
Great Barrier Island
M 203
Kaipara Harbour
Auckland
Manukau Harbour
Mayor Island
Cape Runaway
Bay of Plenty
Tauranga
East Cape
Raglan Harbour
Kawhia Harbour
Gisborne
Gable End Foreland
New Plymouth
Cape Egmont
Napier
Hawke Bay
Patea
Wanganui
M 504
Cape Farewell
Tasman Bay
Nelson
Cook Strait
Wellington
Westport
Scale
0 50 100
NAUTICAL MILES
172° 173° 174° 175° 176° 177° 178°
171° 179°
35° 36° 37° 38° 39° 40° 41° 42°

Chartlet 1


Great Barrier Island
Channel Island
Cape Colville
Little Barrier Island
Waiheke Island
Cape Rodney
Kawau Island
D 125
D 126
AUCKLAND
Kaipara Harbour
M 103
M 106
DANGER AREAS
NORTH ISLAND - NEW ZEALAND
AUCKLAND AREA
★ = Safe Submarine Bottoming Area
Scale
0 5 10 15
NAUTICAL MILES
175°
174°
36° 30'
37°

Chartlet 2


40'
50'
175°
10'
20'
10°
20°
40°
30'
40°
50°
M 304
M 308
DANGER AREAS
NORTH ISLAND - NEW ZEALAND
KAPITI ISLAND - WANGANUI
Kapiti Island
Scale
0
10
20
NAUTICAL MILES

Chartlet 3

Prohibited Areas

Area to be Avoided

An Area to be Avoided has been established to avoid the risk of pollution and damage to the environment in the sensitive area in the vicinity of the Poor Knight Islands. Vessels greater than 45m long, except for those specified below, should avoid the area bounded by the coast and lines joining the following positions:

a. 35˚10.2'S, 174˚20.1'E.
b. 35˚24.7'S, 174˚50.2'E.
c. 35˚29.6'S, 174˚50.8'E.
d. 35˚34.6'S, 174˚49.2'E.
e. 35˚51.3'S, 174˚35.5'E.

The following vessels are granted exceptions:

1. All vessels of the New Zealand navy.
2. All fishing vessels engaged in fishing operations.
3. Barges under tow, provided that the cargo is not oil or other harmful liquid substance as defined in Annex I and Annex II of MARPOL 73/78.

Regulations

A vessel on arrival for the first time at a New Zealand port should purchase a copy of the General Harbor Regulations, and the bylaws of the port from the government shipping offices at Auckland, Bluff, Dunedin, Lyttelton, Napier, Nelson, Picton, Port Taranaki, Wellington, Westport, or Whangarei.

Advance Notice of ETA

The vessel shall send its ETA to the harbormaster 24 hours and 4 hours prior to arrival, except where local requirements are different.. If the ETA falls on a Saturday, Sunday, or public holiday which falls on a Monday, the ETA notification must be received by the harbormaster before 1400 on the previous Friday.

Voluntary Reporting System

A voluntary reporting system for ship operating S of 60˚S is in effect. For more information on this system, see Search and Rescue.

Shipping Routes

1. A Voluntary Code has been introduced to reduce the potential for the pollution of the marine environment around New Zealand's coast. The Code, for shipowners and ship masters, recommends measures to reduce the likelihood of stranding of ships carrying oil or harmful liquid substances in bulk.

It stresses the importance of the shipmaster's duty to exercise discretion in particular circumstances, safe navigation, prompt reporting to Maritime New Zealand when experiencing any difficulties which could lead to pollution, and the summoning of salvage assistance without delay, and observing regional routing schemes.

2. This Code applies to ships carrying oil or other harmful substances in bulk, as defined in Annexes I and II of MARPOL 73/78.

3. **Routes around the New Zealand coast.—**Ships are to keep at least 5 miles off the land, any charted danger(s), or any off-lying island(s), until reaching the position where alteration is required to make port.

A greater distance off may be necessary in adverse onshore weather, or if it's known that the ship has any mechanical deficiency that might impair the power or maneuverability.

4. **Approaches to New Zealand ports.—**Listed, as follows:

• **Whangarei.—**From the N, pass 5 miles to the E of the Poor Knights Islands and High Peaks Rocks, then midway through Parry Channel, and then to the pilot station.

From the S, proceed through Colville Channel and Jellicoe Channel, keeping at least 3 miles off the land, and then to the pilot station.

• **Auckland.—**From the N, enter Hauraki Gulf through Jellicoe Channel, keeping at least 3 miles off the land, then at least 3 miles off Flat Rock, then at least 3 miles off Shearer Rock, and then to the pilot station.

From the E, enter Hauraki Gulf through Colville Channel, keeping to the N of Channel Island, and then to the pilot station.

• **Tauranga.—**From the N, keep at least 4 miles to the W of Mayor Island and then to the pilot station.

From the E, keep at least 5 miles to the N of Volkner Rocks, then 3 miles to the N of Astrolabe Reef, and then to the pilot station.

• **Gisborne.—**From the N, proceed to the E of Ariel Bank, keeping 5 miles off the charted dangers to the SE of the bank, then to a position 3.4 miles due E of Young Nicks Head, and then to the pilot station.

Alternatively, pass midway between Ariel Bank and Monowai Rocks, then at least 4 miles off Tuaheni Point, and then to the pilot station.

From the S, keep at least 5 miles off Table Cape and then to the pilot station.

• **Napier.—**From the N and S, keep at least 5 miles off any charted danger and then to the pilot station.

• **Wellington.—**From the E, keep at least 3 miles off Baring Head and then to the pilot station.

From Cook Strait, pass midway between The Brothers and Fisherman's Rock, then at least 4 miles off Cape Terawhiti, then at least 4 miles off Karori Rock, and then to the pilot station.

• **Picton.—**Pass midway between Cook Rock and Walker Rock, at the entrance to Queen Charlotte Sound, and then to the pilot station**.**

• **Nelson.—**Keep at least 5 miles off Pitt Head and at least 5 miles off Pepin Island and then to the pilot station.

• **Lyttelton.—**From the N, keep at least 5 miles off the land until approaching the pilot station.

From the S, keep at least 5 miles off Steep Head, then at least 3 miles off Long Lookout Point, and then to the pilot station.

• **Timaru.—**From the N, keep at least 5 miles off the land until reaching the pilot station.

From the S, keep at least 5 miles off the land, then at least 3 miles off Tuhawaiki Point, and then to the pilot station.

• **Dunedin.—**From the N, keep at least 5 miles off the land until approaching the pilot station.

From the S, keep at least 4 miles off Cape Saunders, then at least 3 miles E of Tairoa Head, and then to the pilot station.

• **Bluff.—**From the E, keep at least 3 miles off Slope Point, then a least 3 miles off Waipapa Point, then at least 1.5 miles S of Dog Island, and then to the pilot station.

From the W, keep at least 5 miles S of Centre Island and then to the pilot station.

• **New Plymouth.—**From the W, keep at least 5 miles off Cape Egmont, then at least 5 miles off the land, then at least 3 miles off Saddleback Island, and then to the pilot station.

From the N, keep at least 5 miles off the land until approaching the pilot station.

• **Manukau.—**Keep at least 5 miles off charted dangers until approaching the harbor entrance.

Customs

Customs officers are stationed at Auckland (for Whangarei and Opaa), Christchurch (for Greymouth, Lyttelton, and Westport), Dunedin (for Port Chalmers), Invercargill (for Bluff), Napier, Nelson, New Plymouth (for Taranaki), Tauranga, Timaru, and Wellington.

A vessel from overseas must not make its first port of call a subport without permission from the Collector of Customs.

Vessel Identification

Every vessel entering any harbor, as soon as it arrives within signaling distance of the signal station, shall by the most convenient means available establish its identity to the harbor signal station. Such identification shall be acknowledged by the signal station.

The Ministry of Defense has stated that should it become necessary to control the entrance of ships into and the movement of ships within certain ports under its control in New Zealand, the signals described below will be displayed.

These signals will be shown from some conspicuous position in or near the approaches to the ports concerned and may be displayed also by any of the Examination Service Vessels or Traffic Control Vessels operating in the approaches.

Port Control Signals		
Meaning	**Day**	**Night**
Entrance to the port is prohibited	Three red balls, vertically disposed	Three red flashing lights, vertically disposed
Entrance to the port is permitted	Three green lights, vertically disposed and visible all around the horizon	Three green lights vertically disposed and visible all around the horizon
Movement of shipping within the port or anchorage is prohibited	A blue flag	One green light between two red lights, vertically disposed and visible all around the horizon

Masters of vessels are warned that should they approach the entrance to a port which is being controlled by the Ministry of Defense they should not enter a declared “Dangerous Area” or close boom defenses without permission, nor should they anchor or stop in a dangerous area or prohibited anchorage unless instructed to do so.

Masters are advised to communicate with any Government or Port Authority vessel found patrolling in the offing to ascertain the recommended approach to the port.

Examination Service

In certain circumstances it may be necessary to take special measures to examine, or to establish the identity of, individual vessels desiring to enter ports and to control their entry.

This is the function of the Examination Service, whose officers will be afloat in Examination Vessels or Traffic Control Vessels.

These vessels will display the distinguishing flags of the Examination Service, which are the following:

1. The Examination Service special flag with a white and red center, and blue border.
2. The New Zealand Blue Ensign or, exceptionally, the New Zealand White Ensign.

If ordered to anchor in an Examination Anchorage, Masters are warned that it is forbidden, except for the purpose of avoiding an accident, to do any of the following without prior permission being obtained from the Examining Officer:

1. To lower any boat.
2. To communicate with the shore or with any other ship.
3. To move the ship.
4. To work cables.
5. To allow any person or object to leave the ship.

The permission of the Immigration Officer must be obtained before any passenger or member of the crew who has embarked outside New Zealand is allowed to land.

Pratique

The Master of every vessel about to enter a New Zealand port shall, not later than 12 hours and not earlier than 24 hours before the estimated time of arrival at that port, inform the Port Health Officer by radio of the vessel’s ETA, last port, and date of departure therefrom, number of crew, number of passengers, state of health, and indicate if there is a doctor on board. Masters must confirm the ETA 12 hours before arrival.

The appropriate International Code of Signal flags should be displayed at the masthead before the vessel arrives 3 miles from its port of call, and the signal shall be displayed until pratique is granted.

Certain vessels may be granted pratique by radio and therefore need not be visited by a Port Health Officer.

In order for a vessel to be approved for this system, the following requirements must be complied with:

1. A medical officer must be carried as part of the complement of the vessel.
2. The owners of the vessel shall from time to time notify the Director General of Health of the names of the Master and Medical Officer, and any changes thereto.

On receipt by the Port Health Officer of the radio message from the above-mentioned vessel, may grant pratique and inform the Master by radio before the arrival of the vessel.

Vessels trading normally between New Zealand and Antarctica, Australia, Campbell Island, Cook Islands, Fiji, Lord Howe Island, Macquaric Island, Nauru Island Niue, Norfolk

Island, Banaba, Raoul Island, Rarotonga, Samoa, and Tonga are exempted from inspection by the Port Health Officer provided there is no case or suspected case of disease on the vessel.

A similar exemption is granted to vessels making their first port of call in New Zealand directly after leaving any port on the W coast of Canada or the United States, or from any port on the E coast of those countries, if using the Panama Canal.

In these cases, an intervening call may be made en route to New Zealand at any port of the above-listed places.

The exemptions only apply if no person on board suffers from an eruptive disease or a disease attended by fever.

It is unlawful for any person, except in an emergency or with the authority of the Port Health Officer, to board any vessel before pratique is granted.

Until pratique is granted all persons on board, including those who with permission may have boarded the vessel, are liable to quarantine.

Masters of all vessels arriving from any port outside New Zealand, with the exception of those mentioned, shall deliver to the Port Health Officer a maritime declaration of health countersigned by the vessel's Medical Officer, if carried.

The Master of every vessel liable to quarantine should be prepared to furnish to the Port Health Officer a list of all passengers, showing in the respect of each the name, sex, race, age, and port of embarkation. The Master will also be prepared to provide a list of the crew giving the name, race, and rating of each member.

Medical advice may be obtained from coastal radio stations by vessels of all nationalities, free of charge, by means of Medical Advice Radio telegrams. They should be addressed "Radiomedical" followed by the name of the coastal radio station.

Strict prohibition against the import of animals, birds and eggs, fish, reptiles, bees and insects, fruit (including dried fruit), seeds, bulbs, plants, flowers, and nuts into New Zealand are in force. Some are prohibited entry. Entry of others is restricted, and others permitted after treatment. For further information, the Port Agriculture Officer should be consulted when boarding the vessel.

Search and Rescue

The Rescue Coordination Center New Zealand (RCCNZ) is responsible for the coordination of all search and rescue operations in the New Zealand Search and Rescue Region (NZSRR) and can be contacted, as follows:

1. Telephone: 64-4-9148380
2. Facsimile: 64-4-9148388
   64-4-9148391
3. E-mail: rccnz@maritimenz.govt.nz
4. INMARSAT-C: 451200067=MRNZ X

Taupo Maritime Radio (ZLM) maintains a continuous listening watch on all international distress frequencies and can be contacted by e-mail, as follows:

maritime@bclnz.com

A voluntary ship reporting system has been established for all vessels operating in the New Zealand Search and Rescue Region (NZSRR) S of 60˚S for the purpose of assisting the RCCNZ in coordinating SAR operations in that area (60˚S to the S edge of the Ross Sea bounded by 163˚E to 131˚W).

All vessels are requested to notify Taupo Maritime Radio upon entry to and departure from the area. Vessels are also encouraged to make daily position reports. The information will be used for search and rescue purposes only. Contact can be made, as follows:

1. INMARSAT-C: 582-451-200-067
2. Telephone: 64-4-914-8333
3. Facsimile: 64-4-914-8334
4. E-mail: maritime@bclnz.com

Signals

Tsunami Warning System

Sea waves resulting from earthquakes in any part of the Pacific Ocean may have serious effects upon shipping in New Zealand harbors.

In the event of the possibility of a sea wave approaching New Zealand, the Ministry of Civil Defense and Emergency Management, through both Regional Councils and the Rescue Coordination Center New Zealand, will at once advise harbormasters, who will in turn inform all merchant vessels in their harbors as quickly as possible.

The signal to be given to warn vessels in the harbor to take action is a series of five prolonged blasts. In major ports, this signal will be made by sirens, on instructions from the Emergency Management Organization, which will be situated in positions from which the signal may be heard at all points in the harbors. In other ports, vessels will be advised verbally by the harbormaster (see Table 1—Tsunami Warning System—Alert Signal).

On hearing this signal, masters are to set radio watches; wherever possible, both RT and VHF are to be guarded. These watches are to be maintained until the emergency is declared over. All further instructions will be passed by radio (see Table 2—Tsunami Warning System—Emergency Frequencies Available).

Following this signal, harbormasters will take full control of all shipping operations in their area. Masters are asked to give their full cooperation.

Table 1—Tsunami Warning System—Alert Signal

Harbors in which warning signal will be given by sound signal	Harbors in which warning signal will be given verbally
Auckland	Bluff
Dunedin	Gisborne
Greymouth	Napier
Lyttelton	Nelson
Port Chalmers	Manukau
Timaru	Opua
Whangarei (Upper Harbor)	Picton
	Port Taranaki

Table 1—Tsunami Warning System—Alert Signal	
Harbors in which warning signal will be given by sound signal	**Harbors in which warning signal will be given verbally**
	Tauranga Wanganui Wellington Westport Whangarei (Lower Harbor) Whakatane

In certain cases, it may be necessary for the harbormasters to order vessels to sea to avoid serious damage being caused to ships and harbor structures by large tidal fluctuations in their harbors. Mariners are to advise the harbormasters whenever they intend to perform engine maintenance which will immobilize their vessels. It should be noted that the time available for action after receiving the alert signal may be as long as 18 hours or as brief as 2 hours, depending on the epicenter from where the sea wave is spreading.

In the case of vessels at sea when a warning of an approaching sea wave is received by the Ministry of Emergency Management, advice will be given by the existing navigational warning system. These warnings may include instructions for the immediate movement of ships.

Should a disaster occur ashore, all ships in port and at sea in New Zealand waters may be called upon to provide some assistance at the request of civil defense authorities, as follows:

1. Providing temporary shelter and food for homeless civilians.
2. Providing rations, water, fuel, and power to local authorities.
3. Evacuating civilians to another port.
4. Providing wireless communications.
5. Providing fire fighting parties to assist ashore.

Harbormasters will arrange with masters what assistance each ship is able to provide. Ships at sea will be contacted by the normal radio communications system.

These procedures have been agreed upon by Maritime New Zealand, the Ministry of Civil Defense and Emergency Management, police, shipowners, and port authorities.

Submarine Operating Areas

Submarines may exercise in the following areas:

1. Hauraki Gulf.
2. East of Great Barrier Island (36˚10'S., 175˚25'E.) and the Mercury Islands (36˚37'S., 175˚56'E.).
3. Off the S entrance to Cook Strait in an area an area extending S and E from position 41˚45'S, 175˚00'E.

Table 2—Tsunami Warning System—Emergency Frequencies Available			
Port	**Call sign**	**RT frequency—First call 2182 kHz, then call:**	**VHF channel—First call VHF channel 16, then call VHF channel:**
Auckland	Auckland Harbor Radio	2012	12, 14
Bluff	Bluff Harbor Radio		14
Dunedin	Tairoa Heads Radio	2012, 2045, 2162	12, 14
Gisborne	Gisborne Harbor Radio ZMH74	2012, 2045, 2162	12
Greymouth	Greymouth Harbor Radio		6, 63
Lyttelton	Lyttelton Harbor Radio ZMH61	2012, 2045, 2162, 2638	12, 63
Napier	Napier Harbor Radio ZMH75		12
Nelson	Nelson Harbor Radio		6, 12, 14
Manukau	Manukau Harbor Radio	2012	12, 13, 14, 68
Opua	Opua Harbor Radio		6, 12
Picton	Picton Harbor Radio		12
Port Chalmers	Tairoa Heads Radio	2012, 2045, 2162	12, 14
Port Taranaki	New Plymouth Harbor Radio ZMH70	2012, 2045, 2162	12
Tauranga	Tauranga Harbor Radio ZMH70	2012, 2045, 2162	9, 11, 12, 14
Timaru	Timaru Harbor Radio	2045, 2162	9
Wanganui	Wanganui Harbor Radio ZMH211	2012, 2162	12
Wellington	Beacon Hill Radio ZMH28		4, 14, 62

Table 2—Tsunami Warning System—Emergency Frequencies Available			
Port	**Call sign**	**RT frequency—First call 2182 kHz, then call:**	**VHF channel—First call VHF channel 16, then call VHF channel:**
Westport	Buller Port Services Ltd		14, 62
Whangarei	Whangarei Harbor Radio		19
Note.—Upon arriving in port, masters will be advised by the harbormaster which frequency is to be guarded in the event of an alert.			

Designated Safe Submarine Bottoming Areas are located, as follows:

1. **Area No. S1 (Hauraki Gulf).—**An area bound by lines joining the following positions:
   a. 36˚27.9'S, 175˚02.5'E.
   b. 36˚29.9'S, 175˚02.5'E.
   c. 36˚29.9'S, 175˚05.0'E.
   d. 36˚27.9'S, 175˚05.0'E.
2. **Area No. S2 (Little Barrier Island).—**An area bound by lines joining the following positions:
   a. 36˚01.30'S, 175˚03.25'E.
   b. 36˚02.85'S, 175˚06.50'E.
   c. 36˚04.90'S, 175˚05.00'E.
   d. 36˚03.30'S, 175˚01.70'E.
3. **Area No. S3 (Great Barrier Island).—**An area bound by lines joining the following positions:
   a. 36˚26.3'S, 175˚38.5'E.
   b. 36˚29.4'S, 175˚38.5'E.
   c. 36˚29.4'S, 175˚42.1'E.
   d. 36˚26.3'S, 175˚42.1'E.
4. **Area No. S4 (Bay of Plenty).—**An area bound by lines joining the following positions:
   a. 37˚47.9'S, 177˚12.0'E.
   b. 37˚51.9'S, 177˚12.0'E.
   c. 37˚51.9'S, 177˚20.0'E.
   d. 37˚47.9'S, 177˚20.0'E.
5. **Area No. S5 (Hawke Bay).—**An area bound by lines joining the following positions:
   a. 39˚18.9'S, 177˚15.0'E.
   b. 39˚21.9'S, 177˚15.0'E.
   c. 39˚21.9'S, 177˚18.6'E.
   d. 39˚18.9'S, 177˚18.6'E.

Time Zone

The Time Zone description is MIKE (-12). Daylight Savings Time (Zone Description -13) is maintained from the first Sunday in October until the third Sunday in March.

The Time Zone description for the Kermadec Islands is MIKE (-12). Daylight Savings Time is not observed.

The observed Standard Time for Chatham Island is 12 hours 45 minutes fast of UT(GMT). Daylight Savings Time (13 hours 45 minutes fast of UT(GMT)) is maintained from the first Sunday in October until the Saturday before the third Sunday in March.

U.S. Embassy

The U.S. Embassy is situated at 27 Fitzherbert Terrace, Thorndon, Wellington.

The mailing addresses are, as follows:

1. New Zealand address—
   P.O. Box 1190
   Wellington
2. U. S. address—
   PSC 467, Box 1
   APO AP 96531-1034

U. S. Embassy New Zealand Home Page
http://wellington.usembassy.gov

NICARAGUA

General

Nicaragua, which borders Costa Rica and Honduras, is located in Central America. The Caribbean Sea lies to its N and the Pacific to its S.

Both coasts lie within the hot, tropical zone while the temperatures become cooler in the interior highlands.

The Atlantic coast has expansive coastal plains rising to central interior mountains. Inland, the country is spanned diagonally by two high mountain chains.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Special Warning 95 (Issued 10 February 1994; revised 29 October 1997)

1. Mariners operating small vessels such as yachts and fishing boats should note that Nicaragua has boundary disputes with its neighbors in both its Caribbean and Pacific waters, especially with Honduras, and should exercise caution. There have been cases of foreign-flagged fishing vessels and other vessels being seized off the Nicaraguan coast by Nicaraguan authorities. The government of Nicaragua has adopted a new law that mandates the payment of a fine equal to 200 per cent of the value of any boat caught fishing illegally within Nicaragua's Exclusive Economic Zone (EEZ).

2. While in all cases passengers and crew have been released within a period of several weeks, in some cases the ships have been searched, personal gear and navigation equipment has been stolen, and their have been excessive delays in releasing vessels. Prompt U.S. Embassy consular access to detained U.S. citizens on Nicaragua's Caribbean coast may not be possible due to the relative isolation of the region.

3. It should also be noted that there have been incidents of piracy in Caribbean and Pacific waters off the coast of Nicaragua, but the Nicaraguan navy has increased its patrols and no recent incidents have been reported.

Currency

The official unit of currency is the gold cordoba, consisting of 100 centavos.

Government

Flag of Nicaragua

Nicaragua is a republic. The country is divided into 15 departments are two autonomous regions.

Nicaragua is governed by a directly-elected President serving a 5-year term. The unicameral National Assembly is composed of 90 members, who are directly elected using proportional representation, serving 5-year terms.

The legal system is based on a civil law system.

The capital is Managua.

Holidays

The following holidays are observed:

January 1	New Year's Day
Holy Thursday	Variable
Good Friday	Variable
Easter Sunday	Variable
May 1	Labor Day
May 30	Mother's Day
July 19	National Liberation Day
August 1	Fiesta Day
September 14	San Jacinto Battle Day
September 15	Independence Day
November 2	All Souls' Day
December 8	Immaculate Conception
December 25	Christmas Day

Industries

Agriculture is the principal industry. Coffee, cotton, bananas, rice and tobacco are the main crops. Livestock, fishery, forestry, and mining are also important.

The chief local industries are metal products, chemicals, and petroleum refining.

Languages

Spanish is the official language. English and Indian are widely spoken on the Atlantic coast.

Navigational Information

Enroute Volumes

Pub. 148, Sailing Directions (Enroute) Caribbean Sea Volume 2.

Pub. 153, Sailing Directions (Enroute) West Coasts of Mexico and Central America.

Maritime Claims

The maritime territorial claims of Nicaragua are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.

* Requires advance permission or notification for innocent passage of warships in the territorial sea.

Maritime Boundary Disputes

Territorial dispute with Colombia and Honduras over Isla de San Andres (12˚33'N., 81˚43'W.), Isla Providencia (13˚21'N., 81˚22'W.), and the Quito Sueno Bank (14˚15'N., 81˚15'W.) region.

Legal dispute with Costa Rica over navigational rights on the San Juan River.

Advised by the ICJ to adopt a triparite resolution with El Salvador and Honduras to establish a maritime boundary in Golfo de Fonseca which considers Honduran access to the Pacific Ocean.

Search and Rescue

The Nicaraguan Air Force coordinates search and rescue operations. The Maritime Rescue Coordination Center (MRCC) is situated at the international airport in Managua and can be contacted by e-mail, as follows:

fzaaerea@tmx.com.ni

Time Zone

The Time Zone description is SIERRA (+6). Daylight Savings Time (ROMEO (+5)) is observed from the second Sunday in April until the first Saturday in October.

U.S. Embassy

The U.S. Embassy is situated at Kilometer 4.5 Carretera Sur, Managua.

The mailing address is APO AA 34021.

U. S. Embassy Nicaragua Home Page
http://managua.usembassy.gov

NIUE

General

Niue, a self-governing territory in free association with New Zealand, is located in the South Pacific Ocean about 580 miles W of Rarotonga in position 19˚02'S, 169˚55'W.

Niue is a raised coral outcrop with a fringing coral reef around a precipitous and broken coastline. The island takes the shape of two terraces, the lower being 27m above sea level and the upper saucer-shaped plateau rising to 65m.

The climate is tropical modified by the Southeast Trade Winds. Niue is on the edge of the hurricane belt, but severe hurricanes are rare. Strong winds are sometimes experienced from December to late March, which is also the rainy season and the hottest period of the year. from April to November the days are warm and sunny while the nights are cool.

The terrain is steep limestone cliffs along its coast and central plateau.

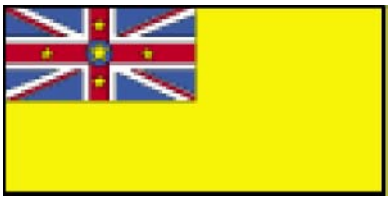
Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the New Zealand dollar, consisting of 100 cents.

Government



Flag of Niue

Niue is a self-governing territory in free association with New Zealand and is fully responsible for internal affairs. New Zealand retains responsibility for any of its external affairs.

Niue is governed by a Premier elected by the Legislative Assembly for a 3-year term. The unicameral Legislative Assembly consists of 20 directly-elected members serving 3-year terms.

The legal system is based on English common law.
The capital is Alofi.

Holidays

The following holidays are observed:

January 1	New Year's Day
January 4	Takai Day
February 6	Waitangi Day (New Zealand Day)
Good Friday	Variable
Easter Monday	Variable
April 25	Anzac Day
June 7	Queen's Birthday
October 16	Constitution Day
October 20	Peniamina Day
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on tourism, handicrafts, and food processing. The most important products of the island are copra, passion fruit, honey, and limes.

Exports go mainly to New Zealand, then to Fiji and Australia.

Languages

English is the official language. The indigenous language is a Polynesian dialect peculiar to the island, but closely related to that of Tonga and Samoa.

Navigational Information

Enroute Volume
Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims
The maritime territorial claims of Niue are, as follows:

Territorial Sea	12 miles.
Fisheries or Economic Zone	200 miles.

Regulations

Rhinoceros Beetle Regulations
Every vessel arriving in Niue from an area infested with rhinoceros beetles, which feeds on and destroys the heart of new growth shoots of the coconut palm, is required to keep at least off the shore or encircling reef of an island from at least 15 minutes before sunset until at least 15 minutes after sunrise.
The areas regarded as infested are, as follows:

1. Fiji.
2. Indonesia.
3. New Britain.
4. New Ireland.
5. Palau.
6. Philippines.
7. Samoa.
8. Tokelau Islands.
9. Tonga.
10. Wallis and Futuna.

Before these regulations can be eased, the following quarantine periods must be observed:

1. Cargo vessels which have been operating in an infested area—3 months.
2. Naval vessels and yachts which have been in an infested port—3 weeks.

Time Zone

The Time Zone description is XRAY (+11). Daylight Savings Time is not observed.

U.S. Embassy

There are no U.S. diplomatic offices in Niue.

NORTH KOREA

General

North Korea, officially known as the Democratic People's Republic of Korea, is located in Northeast Asia. It shares common borders with China and the Soviet Union.

The leading ports are Chongjin and Heungnam. Nampo, the port of Pyongyang, has been dredged and expanded.

Pyongyang is connected to Nampo by railway and river.

The climate is temperate with rainfall concentrated in summer.

The terrain is mostly hills and mountains separated by deep, narrow valleys. There are wide coastal plains wide in the W, discontinuous in the E.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

The following information is published solely for information relative to the navigational safety of shipping and in no way constitutes a legal recognition by the United States of the international validity of any rule, regulation, or proclamation so published.

All vessels transiting the water contiguous to the coast of North Korea are advised of the following:

1. Since 1975 there have been sporadic and hostile acts such as harassments of, shootings on, and capturing of fishing vessels by North Korean military vessels.
2. There have been reports that North Korea claims a 12-mile territorial sea.
3. By decree, effective August 1, 1977, North Korea has unilaterally proclaimed a 200-mile economic zone.

According to the decree, the economic zone will extend 200 miles from the baseline from which the territorial waters are measured, or to the "median line of the sea" in waters where the economic zone of 200 miles cannot be fully extended.

The boundaries for the economic zone in the Sea of Japan have been further defined by the following base points:

a. 38˚36'48"N, 129˚30'30"E.
b. 41˚46'13"N, 131˚31'15"E.
c. 40˚06'27"N, 133˚34'38"E.
d. 38˚36'48"N, 132˚36'52"E.

The decree stipulates that the North Koreans will exercise sovereignty over all living and nonliving resources within these waters, in the water, on and beneath the seabed.

Without approval from an organ of North Korea, all foreigners, foreign vessels, and foreign aircraft are prohibited from activities such as fishing, establishing facilities, and exploring or developing, within the economic zone. Also, any activities which obstruct the economic activities of North Korea and all other activities detrimental to the people and marine resources, including sea and air pollution.

On August 1, 1977, North Korea announced the establishment of a military boundary, set at 50 nautical miles, in the Sea of Japan, measured from a hypothetical line drawn from Mu Su Dan to the Demilitarized Zone (DMZ). The seaward limit of the military boundary is defined by a line connecting the following points:

a. 38˚36'48"N, 129˚30'30"E.
b. 41˚46'13"N, 131˚31'15"E.

In the Yellow Sea, the military boundary extends to the limits of the economic zone, which have not been defined.

Within the military boundary, all foreign military ships and planes are prohibited, and foreign nonmilitary ships (except fishing boats) and planes are prohibited unless prior permission is obtained.

Currency

The official unit of currency is the North Korean won, consisting of 100 chon.

Government

Flag of North Korea

North Korea is a communist state. The country is divided into nine provinces and four special cities.

North Korea is ruled by the Korean Workers Party (Communist Party), which elects a Central Committee. The unicameral People's Assembly consists of 687 directly-elected members, who are previously approved by the Korean Workers Party, serving 5-year terms.

The legal system is based on German civil law, with Japanese influences and Communist legal theory.

The capital is Pyongyang.

Holidays

The following holidays are observed:

January 1	New Year's Day
February 16	Kim Jong Il's Birthday
April 15	Kim Il Sung's Birthday
April 25	People's Army Foundation Day
May 1	Labor Day
July 27	Victory Day
August 15	Anniversary of Freedom
September 9	Communist Party Foundation Day
Chusok (Harvest Moon Festival)	Variable
October 10	Worker's Party Foundation Day
December 27	Constitution Day

Industries

The main industries are based on machine building, electricity, chemicals, mining, metallurgy, textiles, food processing, and military products.

Growing grain crops, mainly rice and corn, is the main farming activity in North Korea.

Languages

Korean is the official language.

Mined Areas

Extensive mine laying took place in Korean waters during the Korean War, 1950 to 1953. The areas, some formerly published in CHINPACS, are dangerous due to mines. Due to the elapse of time the risk in these areas to surface navigation is now considered no more dangerous than the ordinary risks of navigation. A real risk still exists with regard to anchoring, fishing, or any form of submarine or seabed activity. Mariners should not enter unswept areas without obtaining routing instructions from Korean Naval authorities.

Navigational Information

Enroute Volume

Pub. 157, Sailing Directions (Enroute) Coasts of Korea and China.

Maritime Claims

The maritime territorial claims of North Korea are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone **	50 miles.
Fisheries or Economic Zone **	200 miles.

* Claims strait baselines. Requires advance permission or notification for innocent passage of warships in the territorial sea.

** Claims a Security Zone from 50 to 200 miles off the coast. For further information, see the Cautions section.

Maritime Boundary Disputes

Periodic maritime disputes with South Korea.

Pilotage

Vessels are advised of the following radio procedures for calling at ports in North Korea. Pilotage is compulsory. All communications are to be made through the coast radio station nearest the port of call.

Vessels should send their ETA at pilot stations 10 days, 72 hours, 24 hours, and 4 hours in advance to the Korea Ocean Shipping Agency (KOSA) at their port of call. The initial message must contain the following information:

1. Vessel's name.
2. Flag.
3. Call sign.
4. Gross tonnage, dwt, and nrt.
5. Length, beam, and draft.
6. Name of cargo.
7. Type and quantity of cargo.
8. Number and capacity of derricks.
9. Number and size of hatches/holds.
10. Crew list.
11. Passenger list.
12. Destination.
13. ETA.

Vessels shall advise KOSA of position and time when crossing the lines joining the following positions:

1. East coast:
   a. 42˚24'N, 131˚10'E.
   b. 41˚43'N, 132˚20'E.
   c. 38˚00'N, 130˚00'E.
   d. 38˚00'N, 128˚45'E.
2. West coast:
   a. 39˚50'N, 123˚20'E.
   b. 37˚00'N, 123˚20'E.
   c. 37˚00'N, 126˚30'E.

Vessels must advise KOSA of their position on a daily basis after crossing the above lines.

Vessels should contact the KOSA office at their port of call on VHF channel 16 when they have arrived at the pilot station.

Vessels should remain 20 miles off the coast and maintain a continuous listening watch on VHF channell 16 until the pilot boards.

Regulations

The following are extracts from the regulations for foreign vessels entering or leaving the port in North Korea.

Foreign vessels may enter or leave the port in the daytime only and allowed under conditions that safety of the sea is guaranteed by sweeping of a naval unit.

The master of a vessel entering a port must request a pilot from the harbor control organ by radio or other means of communication through the vessel's agent 24 hours in advance of the scheduled time of arrival.

A vessel entering or leaving a port must move according to the signals displayed by the port signal station.

A vessel with a pilot on board must fly the International Code flag H on the foremast or any place where best seen.

During the day, a vessel entering a port shall fly her national flag from the stern and the North Korean flag on the bow.

The agents receiving notice of arrival from a foreign vessel shall report to the harbor control organ 24 hours prior to scheduled time of entry the vessel's name and type, vessel's name in code letters, nationality, tonnage, cargoes, passengers, draft, port and departure date, purpose and scheduled date, and hours of entry into port.

A vessel approaching the harbor limits must hoist the quarantine flag and the vessel's name in code flags.

Inspection Office of Border Passage shall inform necessary points to the adjoining coast and naval defense units.

The naval defense unit shall convoy the vessel from the fixed point to the appointed anchorage.

When a vessel remains at the anchorage near the limits of the harbor area the harbor control organ shall confirm the vessel's nationality and name.

Quarantine officers board the vessel and are acquired from the Inspection Office of Border Passage and pilots from the Harbor Office.

Search and Rescue

The Waterways and Lighthouse Department is responsible for coordinating search and rescue operations.

Signals

Whistle Signals

The following whistle signals are used in Korean ports.

Request	Signal
Entering harbor.	Two long blasts.
Leaving harbor.	One long blast.
Calling pilot.	One long blast, one short blast, one long blast.
Calling lighter for ship.	One long blast, two short blasts, one long blast.
Calling cargo lighter.	One long blast, one short blast.
Calling launch.	One short blast, one long blast.
Recalling all crew members.	Two short blasts, one long blast.
Requiring medical assistance.	One short blast, one long blast, one short blast.
Emergency (SOS).	Three short blasts, three long blasts, three short blasts.
Getting underway.	Two short blasts, two long blasts, two short blasts.

Request	Signal
Finish unloading.	One long blast, three short blasts.

Storm Signals

Storm signals are used in Korean waters to indicate the expected force of winds, regardless of direction.

By day	At night	Meaning
A red ball	A white light above a blue light.	Force 7 to 8.
A red cone, point up	Two red lights, disposed vertically.	Force 9 to 11.
A red cross	A blue light between two red lights, disposed vertically.	Typhoon—Force 12.

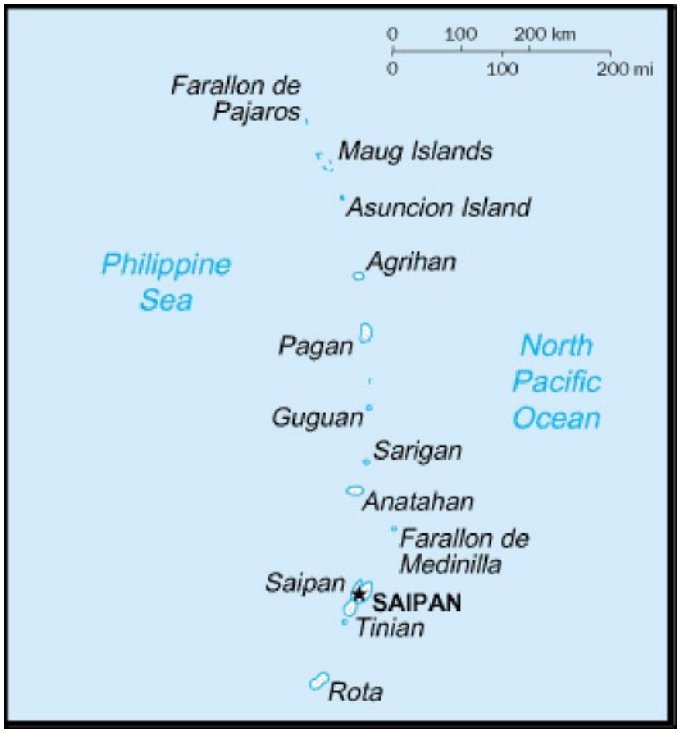
Time Zone

The Time Zone description is INDIA (-9). Daylight Savings Time is not observed.

U.S. Embassy

There is no U.S. diplomatic representation in North Korea; the Swedish Embassy in Pyongyang represent the US as a consular protecting power.

NORTHERN MARIANA ISLANDS



General

The Northern Mariana Islands, a self-governing U.S. commonwealth, is located in the North Pacific Ocean. It consists of a chain of volcanic islands, which extends in a N and S direction for about 450 miles. The islands in the group from N to S are Farallon de Pajaros, Maug, Asuncion, Agrihan, Pagan, Alamagan, Guguan, Sarigan, Anatathan, Farallon de Medinilla, Saipan, Tinian, Aguijan, and Rota.

Except for Maug, which is a cluster of tiny islands, all are single islands which rise precipitously as mountain peaks of rocky, volcanic material. Their total land area is about 184 square miles. The three principal islands, Saipan (47 square miles), Tinian (39 square miles), and Rota (32 square miles) form two-thirds of the land area of the group. Guam, a U.S. Territory since 1898, is not included in the Northern Marianas.

The climate is tropical marine and moderated by NE trade winds. There is little seasonal temperature change. The dry season is December to June. The rainy season is July to October.

The terrain is limestone with level terraces and fringing coral reefs in the S islands. The N islands are volcanic.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the United States dollar, consisting of 100 cents.

Government

Flag of the Northern Mariana Islands

The Northern Mariana Islands is a self-governing commonwealth in free association with the United States. The country is divided into four municipalities.

The Northern Mariana Islands is governed by a directly-elected governor serving a 4-year term. The legislature consists of a directly-elected Senate, with nine members serving 4-year terms, and a directly-elected House of Representatives, with 18 members serving 2-year terms.

The legal system is based on the U.S. legal system.

The capital is Saipan.

Holidays

The following holidays are observed:

January 1	New Year's Day
January 8	Commonwealth Day
Third Monday in January	Martin Luther King Day
Third Monday in February	President's Day
March 24	Covenant Day
Good Friday	Variable
Easter Monday	Variable
Ascension Day	Variable
Whitmonday	Variable
May 31	Memorial Day
July 4	Independence Day
First Monday in September	Labor Day
Second Monday in October	Columbus Day
November 4	Citizenship Day
November 11	Veteran's Day
Fourth Thursday in November	Thanksgiving Day
December 9	Constitution Day
December 25	Christmas Day

Industries

The main industries are based on tourism, construction, light industry, and handicrafts. Copra and fish are the two most important exports. Small quantities of vegetables, fruit, and staple crops are exported.

The principal livestock are pigs and poultry. Forestry activities are minimal. Food, construction equipment and materials, and petroleum products are major imports.

Small scale local industries include handicrafts, bakeries, boat building, and fish processing. Bauxite and phosphates are mined.

Languages

English, Chamorro, and Carolinian are the official languages.

Time Zone

The Time Zone description is KILO (-10). Daylight Savings Time is not observed.

U.S. Embassy

The Northern Mariana Islands is a self-governing commonwealth of the United States.

PACIFIC OCEAN

General

The Pacific Ocean, the world's largest ocean, is divided by the Equator into the North Pacific and South Pacific.

The North Pacific Ocean is bordered by North America, Russia, and China. The South Pacific Ocean is bordered by South America, Antarctica, Australia, and New Zealand.

Oceanic depths are mainly known from lines of soundings run by ships on passage or in connection with the laying of submarine cables and, recently, from oceanographic research.

The Pacific coast of Central America is typical of much of the known topography of the ocean floor of the North Pacific Ocean. The Middle America Trench, extending from the S end of the Golfo de California almost to Panama, has been explored most thoroughly. It was found, after producing a contour map of the area, that the floor was flat, in part, for several miles across and was V-shaped elsewhere. A thick layer of sediment was found underneath the flat floor, while the V-shaped floor was free of sediment.

Several submarine canyons cut the landward wall of the trench, and a group of basins with varied depths up to about 6,768m and some abyssal hills, presumably submarine volcanoes, are spread out on the floor. Off Baja California, about 1,000 seamounts are located in an area covering 410,000 square miles.

Soundings in the South Pacific Ocean show mainly even depths, but average some 549m or 731m less than in the North Pacific. Between the Hawaiian Islands and Tahiti, and S of the latter as far as 40˚S, the bottom consists mostly of red clay; except around volcanic islands, where volcanic debris and ordinary mud prevails. In nearly all of the soundings, manganese is found.

In other parts of the ocean, where the depth is over 3,658m, the bottom is generally of red clay, but in some cases of soft, gray mud.

The area of the Pacific Ocean, excluding adjacent seas, is about 64,000,000 square miles. The central Pacific trough, extending from the Aleutian Islands to 60˚S, and from Japan to the W coast of the United States, has free flow at depths exceeding 3,962m, although numerous elevations and ridges are present.

The W margins of the main Pacific basin are characterized by an almost continuous belt of deep trenches, which generally lie close to the ocean side of long arcs of islands. These regular island chains are separated from the continental shelves of Asia and Australia-New Guinea by marginal seas.

The islands frequently occur in a double belt, the inner belt on the continental side being actively volcanic. Intense seismic activity is also associated with the islands and trenches.

Depths in the great basins appear to be between 3,658m and 5,486m; there are however, some deep trenches near the Marina Islands, Tonga, the Kermadec Islands, Japan, and the Philippines, which are from 7,315 to 10,973m deep.

There is also evidence that large numbers of seamounts exist throughout the Pacific, rising in many cases over 3,658m from the ocean floor.

Cautions

The Strait of Magellan separates Archipielago de Tierra del Fuego from the Patagonian mainland and Archipielago Reina Adelaide. The strait was named by its discoverer, Ferdinand Magellan, in 1520. The strait is entered at the W end between Cabo Victoria (52˚17'S., 74˚54'W.) and Cabo Pilar, about 28 miles SSE.

The E entrance lies between Punta Dungeness (52˚24'S., 68˚25'W.) and Cabo Espiritu Santo, about 16 miles SW. The distance between the W and E entrances to the strait, through the various channels, is 310 miles.

Vessels must exercise caution when navigating the strait in either direction. In bad weather, which is likely to be the case for more or less protracted periods, the navigation of Magellan Strait is particularly difficult and dangerous. Generally, the anchorages are foul and rocky throughout the strait.

The Coral Sea is bounded on the S by the parallel of 30˚S; on the W by the E coast of Australia; on the N by the S coast of New Guinea and the E end of the Solomon Islands; and on the E by the islands of Vanuatu and the SE extremity of New Caledonia.

The three largest reefs in the world, the Great Barrier Reef, off Queensland, the Tagula Reef of Louisiade Archipelago, and the New Caledonia Reefs, lie in the area.

The Pacific Ocean has many dangerous reefs, shoals, and banks rising abruptly from great depths.

Piracy

The International Maritime Bureau (IMB) of the International Chamber of Commerce has established a Piracy Countermeasures Center at Kuala Lumpur. This center operates for the Southeast Asian Region and is able to receive reports from vessels concerning attacks and advise of danger areas. Piracy warnings are broadcast by the center. For further information, see Malaysia—Cautions.

Special Warning 120 (Issued 16 November 2001)

1. Due to recent events in the Middle East and the American homeland, U.S. forces worldwide are operating at a heightened state of readiness and taking additional defensive precautions against terrorist and other potential threats. Consequently, all aircraft, surface vessels and subsurface vessels approaching U.S. forces are requested to maintain radio contact with U.S. forces on bridge-to-bridge channel 16, international air distress (121.5 MHz VHF), or MILAR Distress (243 MHz UHF)

2. U.S. forces will exercise appropriate measures in self-defense if warranted by the circumstances. Aircraft, surface vessels, and subsurface vessels approaching U.S. forces will, by making prior contact as described above, help make their intentions clear and avoid unnecessary initiation of such defensive measures.

3. U.S. forces, especially when operating in confined waters, shall remain mindful of navigational considerations of aircraft, surface vessels, and subsurface vessels in their immediate vicinity.

4. Nothing in this special warning is intended to impede or otherwise interfere with the freedom of navigation or overflight of any vessel or aircraft, or to limit or expand the inherent self-defense right of U.S. forces. This special warning is published solely to advise of the heightened state of readiness of U.S. forces and to request that radio contact be maintained as described above.

Seismic Activity

General.—The Pacific Ocean is almost completely encircled by regions of earthquake and volcanic activity.

North Pacific Ocean.—The most active regions in the North Pacific Ocean extend from the Bonin Islands N along Japan, the Kuril Islands, eastern Kamchatka, the Aleutians, the NW corner of the Gulf of Alaska, and along the coast of Mex-ico and Central America from about 18˚N, 100˚W to the Gulf of Panama.

There are regions of moderately-frequent activity in the northwest Pacific extending from Taiwan; along the Ryukyu Islands, to southwestern Japan; and in the Marianas. Moderately-frequent activity along the North American coast occurs W of Vancouver Island and in the region which extends from the Oregon-California border S along the coast of California, through the Golfo de California, to about 18˚N, 105˚W.

Smaller concentrations of activity occur in the Hawaiian Islands, western Washington and Oregon, and SW of Central America.

The coastal regions of the Asian mainland, western Kamchatka, northern and western Alaska, western Canada, southern Oregon, northern California, southern Baja California, and central Mexico are essentially free of destructive seismic activity.

South Pacific Ocean.—The seismicity of the South Pacific Ocean comprises earthquake activity, volcanism as it relates to island formation, and tsunamis. The earthquake activity is primarily associated with the tectonically-active trench regions, such as the New Hebrides Trench, the Tonga Trench, the Kermadec Trench, and the Peru-Chile Trench. These areas have been the most prolific producers of earthquakes of magnitude greater than 7 on the Richter scale; some 40 earthquakes were recorded in these regions from May 1968 to November 1977.

Four new islands were formed by volcanism from 1967 through 1976. One of these appeared near the Tonga Trench; the others appeared along the N side of the New Hebrides Trench.

Under certain circumstances, a seismic disturbance may generate a tsunami. During the period 1971 through 1977, nine tsunamis were reported in the active trench regions (exclusive of the Peru-Chile Trench); one of these was associated with the formation of a new island. Maximum wave heights occur with earthquakes of magnitude 6.5 or greater.

Tsunamis

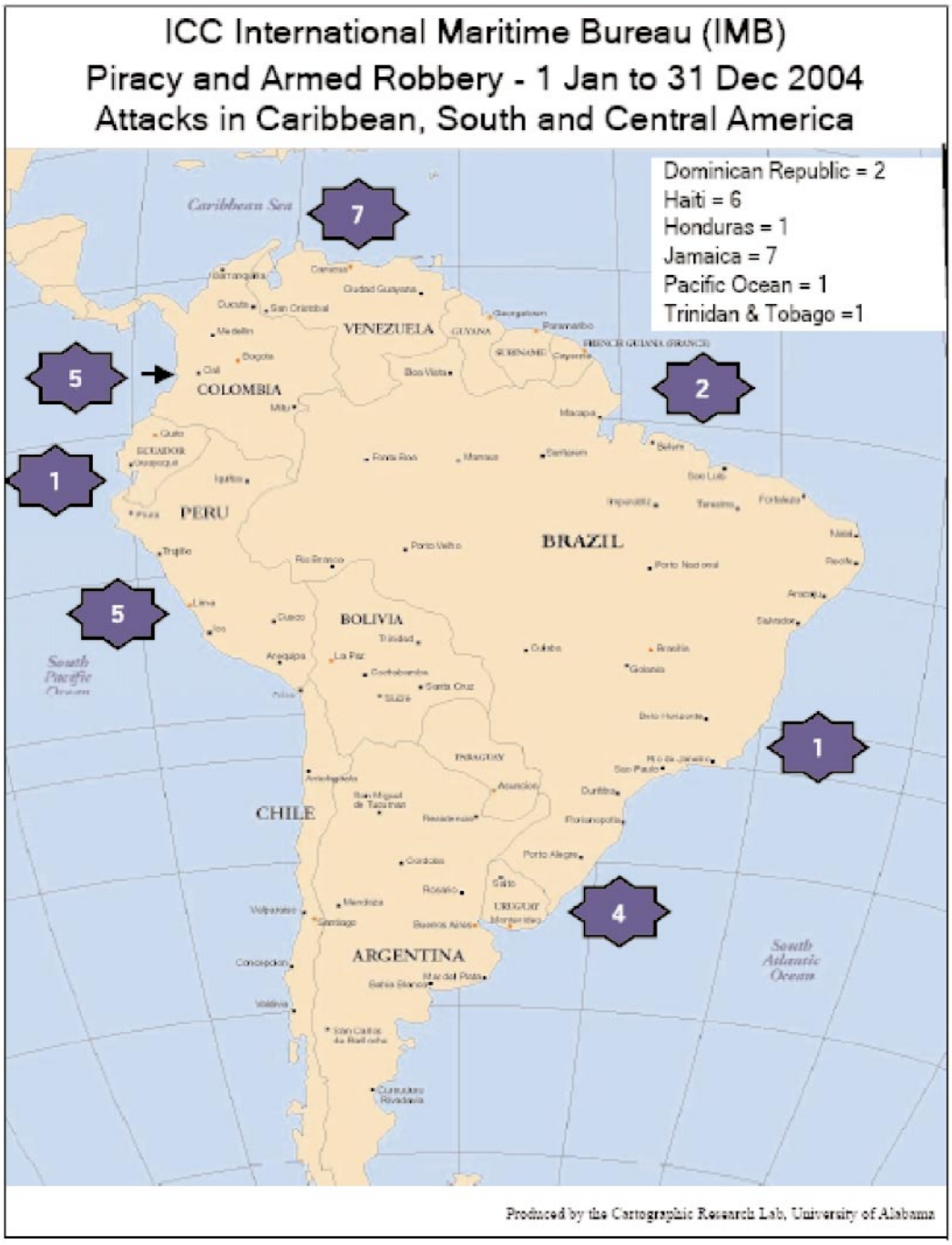
Tsunamis, named from the Japanese term meaning “harbor wave” are also known as seismic sea waves and are often erroneously referred to as “tidal waves” because they are caused by submarine earthquakes.

Tsunamis are long-period waves generated by earthquakes or underwater volcanic explosions. In the deep water of the ocean ocean, the wave crests may be 100 or more miles apart, and their height from crest to trough may be only 0.5m. They cannot be felt aboard ships in deep water, and they cannot be seen from the air. But a tsunami has an impressive amount of energy.

Courtesy of the International Chamber of Commerce International Maritime Bureau—http://www.icc-ccs.org

Even in the deepest water , a tsunami is a shallow water wave, which means that the progress of the series of waves involves the movement of the entire vertical section of the ocean, through which the tsunami passes. In the deep ocean, a tsunami may reach speeds of 600 knots. When a tsunami reaches the shoaling water of the coast, the velocity of the wave decreases and the energy contained in the wave causes the waves to build up in height, sometimes to more than 30.5m.

On entering shallow water the waves become shorter and higher and on coasts where there is a long fetch of shallow water with oceanic depths immediately to seaward, and in V-shaped harbor mouths, the waves can reach disastrous propor-



Courtesy of the International Chamber of Commerce International Maritime Bureau—http://www.icc-ccs.org

tions. Waves having a height of 20m from crest to trough have been reported.

The first wave is seldom the highest and there is normally a succession of waves reaching a peak and then gradually disappearing. The time between crests is usually from 10 to 40 minutes. Sometimes the first noticeable part of the wave is the trough, causing an abnormal lowering of the water level.

Mariners should regard such a sign as a warning that a tsunami may arrive within minutes and should take all possible precautions, proceeding to sea if at all feasible.

Tsunamis travel for enormous distances, up to one-third of the circumference of the earth in the open waters of the Pacific. In 1960, a seismic disturbance of exceptional severity off the coast of Chile generated a tsunami which caused much damage and loss of life as far afield as Japan.

A ship in a harbor, either becoming aware of a large earthquake in the vicinity, or observing sudden marked variations in sea level, or receiving warnings of an approaching tsunami, should seek safety at sea, in deep water.

Although large tsunamis cause great havoc, small waves in shallow water can cause considerable damage by bumping a ship violently on a hard bottom.

Large tsunamis, waves resulting from submarine earthquakes, possibly as high as 24.4m, have occurred along the coast of Peru.

Tsunamis have been reported on many occasions along the Pacific coast of Mexico. Most significant was a 9.1m high tsunami which occurred at Acapulco in 1909. More recently, maximum observed fluctuations in water level along the Mexican coast during the tsunami of 4 November 1952 were a rise of 0.5m at La Paz, a fall of 1.1m at Acapulco, and a rise of 1.2m at Salina Cruz.

Destructive tsunamis have been reported from most of the coastal regions of the North Pacific Ocean but occur most frequently along the E coasts of Japan and Kamchatka, and in the Aleutians, the Gulf of Alaska, Mexico, and Hawaii. Most tsunamis in the area have been generated by earthquakes whose epicenters are located near the edge of the shelf E of Japan and Kamchatka, along the S flank of the Aleutian Islands, in the NW part of the Gulf of Alaska, and along the Peru-Chile Trench.

Tsunamis have plagued Southeast Asia since their earliest reports in the year 416. More than 200 tsunamis of varying intensities have been recorded to date. All tsunamis reported have originated within the area; some have traveled far beyond these waters. For example, waves caused by the explosive eruption of Krakatau in Selat Sunda in 1883 were reported from tide stations as far away as England. Waves were over 30m high in Selat Sunda, 3.3m high 23 miles W of Jakarta, and 0.2m high in Surabaja Strait. Waves caused by this explosion affected most of the S coastal regions of Indonesia and northern Australia.

Tsunami effect data indicate frequent heavy damage to vessels, breakwaters and wharves, flooding, and property displacement. More severe tsunamis, such as that in the Moro Gulf, Philippines (1976) have resulted in 5,000 to 8,000 deaths. In 1979, there were more than 600 deaths due to tsunamis and four villages destroyed in Indonesia.

Tsunami Warning System

General.—Although scientists can compute the time required for a tsunami to travel from one point to another, and thus accurately predict the arrival time of a tsunami generated by a given earthquake, there is much about tsunamis that scientists do not know. For example, there is no way to tell whether an earthquake has generated a tsunami except by actually observing the disturbance. And there is no way to forecast the height of the waves in a tsumani at a given coast. The mechanisms which can cause a tsunami to have a height of 15.2m or more at one place and less than 1.5m only a few miles away are only imperfectly understood.

Since 1948, a system has existed to protect the population of the Pacific Ocean from tsunamis generated in distant areas. With advance warning, ships can put out into deep water where the passing waves of the tsunami are not detectable. People ashore can evacuate coastal areas which may be flooded. The system is called the Tsunami Warning System and is operated by the National Weather Service, from the Weather Service's Honolulu Observatory.

The Tsunami Warning System is an amalgam of organizations, governmental and private, foreign and domestic, all operating at a high degree of readiness to detect the infrequent tsunamis which cause death and destruction across the Pacific Ocean. The operation of the system begins with the detection of major earthquakes by the cooperating seismograph stations, scattered from La Plata, Argentina, to Hong Kong and from Wellington, New Zealand, to Indian Mountain, Alaska. Data is transmitted over the fastest available circuits to Honolulu.

Tsunami Watch.—When an earthquake of sufficient magnitude to generate a tsunami occurs in the Pacific Ocean area, Tsunami Warning System personnel determine the location of the earthquake epicenter, the point on the earth's surface above the subterranean source, or focus, of the earthquake. If the epicenter is under or near the ocean, tsunami generation is possible. On the basis of seismic evidence, the Warning System issues a Tsunami Watch, which tells participants that an earthquake has occurred, where it has occurred, and that the possibility of a tsunami exists. Because tsunamis move through the water in accordance with known physical laws, accurate estimated times of arrival can be given for each participant's location.

A Tsunami Watch is not a Tsunami Warning, but constitutes the system's first alerting action. The term "watch" corresponds to similar alerts issued by NOAA for tornadoes, hurricanes, and other natural hazards. From the time a Tsunami Watch is issued, emergency forces and the general public are aware that the possibility of tsunami exists.

Tsunami Warning.—The first positive indication of the existence of a tsunami usually comes from tide stations nearest the disturbance. When confmnation is received, the Honolulu Observatory issues a Tsunami Warning, alerting warning system participants to the approach of potentially destructive waves and repeating tsunami ETAs for all locations. Local warning, evacuation, and other emergency procedures are then undertaken by the designated agents of warning recipients as they attempt to prevent loss of life and reduce loss of property during a tsunami emergency.

Because of the extremely short fuse on local warning operations, Regional Tsunami Warning Systems in Alaska and Hawaii issue Tsunami Warnings for areas near any potentially tsunami-generating earthquake. If tidal data confIrm the existence of a tsunami, the warning is extended to the entire region. If not, the warning is quickly canceled. Ships in harbors should immediately proceed to deep water when a tsunami warning is received. The time element is critical because of the speed of the waves.

Wave Heights

South Pacific Ocean.—Wave heights are generally low N of 10˚S and increase with increasing latitude to about 55˚S. The lowest waves occur S of Panama, where average monthly wave heights are less than 1.5m throughout the year. Wave heights

are also low along the South American coast N of 30"S. The highest waves occur S of 50˚S during the southern winter (July, August, September), when average monthly wave heights exceed 3.5m in most places. The occurrence of waves greater than 6ms ranges from less than 5 per cent most places N of 30˚S to about 20 per cent from 55˚S to 60˚S in mid-ocean from May through October. In most areas, waves are lowest during the summer (January, February, March) and highest in the winter (July, August, September).

Northern South Pacific Ocean.—Wave heights are highest in mid-ocean at 10˚N and lowest in the Gulf of Panama. Waves of less than 1.5m occur more than 60 per cent of the time in the Gulf of Panama most of the year. Wave heights of 3.5m and greater occur more than 10 per cent of the time in mid-ocean near 10˚N from December through April. The average wave height most places is between 1 and 2m.

Eastern South Pacific Ocean.—Wave heights are generally low at 10˚S and increase with increasing latitude to about 55˚S. They are lower along the South American coast than in mid-ocean at the same latitude. Average wave heights range from 1.5m off the coast of Peru from October through April to 3.5m W of 19˚W, S of 55˚S from June through September.

Wave heights are lower during the winter (July, August, September) than in the summer (January, February, March). The incidence of wave heights greater than 6m varies from less than 5 per cent most places N of 30˚S to about 20 per cent in mid-ocean at 55˚S to 60˚S from June through October.

Western South Pacific Ocean.—Average wave heights range from 1.5m at 10˚S during the summer (January, February, March) to 3.5m in mid-ocean S of 5˚S during the winter (July, August, September). Waves are lower during the summer than in the winter and lower around New Zealand due to the sheltering effects of the land mass. The occurrence of wave heights of 6m and greater varies from less than 5 per cent around New Zealand and N of 30˚S to about 20 per cent in mid-ocean S of 55˚S from June through October.

North Pacific Ocean.—Waves greater than 6.1m can occur anywhere in the North Pacific. Such extreme waves are often obscured in the statistical treatment and graphic representation of the data. Seas exceed 6.1m as much as 10 per cent of the time in the southern Gulf of Alaska and 5 per cent in the E central North Pacific Ocean. Similarly, swell greater than 3.7m occurs as much as 35 per cent of the time in the southern Gulf of Alaska and 30 per cent in the E central North Pacific Ocean. On the other hand, high waves are least frequent in the S part of the North Pacific Ocean. Extreme seas, however, usually accompany tropical storms at their various stages.

Similarly, the coastal waters around the periphery of the North Pacific Ocean may experience hazardous wave conditions. For example, the island arcs of eastern Asia and southern Alaska, which generally parallel or lie athwart primary storm tracks throughout the year, are frequently subjected to high waves. The rocky precipitous coasts of North America are sometimes pounded by heavy swell from storms in the Gulf of Alaska and westward. Even the Golfo de Tehuantepec, in southern Mexico, is affected by the “tehuantepecer” and “papagayos,” violent squally winds that spill over from the Gulf of Mexico from November through February and quickly raise short steep seas. The resulting swell may reach as far as the Galapagos Islands.

Mountainous waves (greater than or equal to 12.2m) may occur in any of the deep-ocean regions of the North Pacific Ocean, with the possible exception of the S central portion. Such extreme wave heights result from prolonged exposure to the gale winds of intense mid-latitude extratropical storms and low latitude tropical storms. These storms usually occur during the colder months and the warmer months, respectively.

Northeastern North Pacific Ocean.—Sea and swell motion generally parallels that of the winds, predominating from the W quadrant over most of this region. Seas in excess of 6.1m generally occur with a frequency of 1 to 4 per cent during winter. In contrast, during summer the likelihood of seas greater than 6.1m and swells greater than 3.7m is generally 1 per cent or less throughout this region. However, recorded frequencies of high seas and swell may not be as great as expected in stormy regions because of the paucity of ship traffic offshore; most ships follow the Inner Passage when storms are reported.

Southeastern North Pacific Ocean.—Seas generally exceed 6.1m less than 1 per cent of the time except off Mexico. Seas exceed 3.7m at least 5 per cent of the time W of Mexico in summer and autumn. Elsewhere, seas greater than or equal to 3.7m occur with a frequency of 1 per cent or less. Swell in excess of 3.7m generally occurs 1 per cent or less of the time, except off central Mexico in summer (about 5 per cent), off southern Mexico in autumn (about 10 per cent), and off southern Mexico in winter (about 5 per cent). Waves are generally lowest in spring and highest in autumn and winter.

Northwestern North Pacific Ocean.—The northern Sea of Japan and Tatar Strait are subjected to their roughest waves in autumn, at the start of the monsoon but before coastal waters freeze over. During this season, seas are greater than or equal to 3.7m 5 to 10 per cent of the time and greater than or equal to 6.1m 1 to 5 per cent of the time; swell is greater than 3.7m 5 to 10 per cent of the time. The likelihood of these height thresholds increases going N. In summer, the calmest season, seas greater than or equal to 3.7m and greater than or equal to 6.1m and swell greater than 3.7m occur about 1 per cent or less of the time. Wave heights in spring are intermediate between those of the two monsoons. About once every 2 years, a typhoon in or near the S part of the area causes severe wave conditions.

Throughout the Sea of Okhotsk and along the Kuril Islands, waves are roughest in autumn and winter. Despite the growing ice pack, the prevailing N winds build up high waves along the Pacific Ocean side of the Kuril Islands. Seas are greater than or equal to 3.7m at least 20 per cent of the time and greater than or equal to 6.1m at least 10 per cent of the time; swell exceeds 3.7m about 20 per cent of the time. Waves are least developed during summer, when sea and swell attain heights greater than or equal to 3.7m less than 5 per cent of the time; however, these heights are exceeded nearly 20 per cent of the time for sea and 10 per cent of the time for swell in the northeastern Sea of Okhotsk because of strong S winds.

Wave conditions in the western Bering Sea remain rough from autumn through spring because of frequent North Pacific storms. Seas exceed 3.7m and 6.1m 10 per cent and 1 per cent of the time, respectively; swell exceeds 3.7m about 20 per cent of the time in this region. The summer frequencies of high seas and swell are 1 per cent or less. North toward the ice pack, the frequency of high waves decreases rapidly.

Southwestern North Pacific Ocean.—High waves are most common in the region NE of Japan during the winter monsoon because of frequent storms. Waves are almost as rough in the southern Ryukyu Islands. East of Japan, seas and swell exceed 3.7m as much as 10 per cent of the time; seas exceed 6.1m about 5 per cent of the time.

The frequency of seas greater than or equal to 3.7m and greater than or equal to 6.1m and of swell greater than 3.7m is about 3 per cent, less than 1 per cent, and about 4 per cent, respectively, in the Sea of Japan and the Yellow Sea during the winter monsoon; near Taiwan, these frequencies are 10 per cent, 1 per cent, and 5 per cent, respectively. During the summer monsoon, seas exceed 3.7m less than 5 per cent of the time and 6.1m less than 1 per cent of the time. Swell in excess of 3.7m occurs with a frequency of 5 per cent or less. During the spring and autumn transitions, wave conditions are generally intermediate between those of the monsoons, although somewhat rougher in autumn than in spring.

Three or four typhoons enter the S part of this region each year; one typhoon every 3 years enters the N sector.

Western Southeast Asia.—High waves occur frequently in the Indian Ocean and the South China Sea because of the extensive open water fetches for wave generation by the trade and monsoon winds. High seas 1.5m or higher reach frequencies of 50 per cent to 60 per cent in both regions, but at different times of the year .In the entire area the greatest frequency of high seas (70 per cent) occurs in Formosa Strait in November.

In Indonesian waters, where fetches are shortened by numerous reefs and islands, the frequency of high waves is low during most of the year.

Eastern Southeast Asia.—Sea and swell are generated chiefly by the monsoons in the W, the North Pacific mid-latitude storms in the N, trade winds over the central and S regions, and tropical cyclones N of 5˚N.

Except in the NE, where there is a high frequency of rough waves generated by the passage of winter storms, seas and swell are most frequent in autumn, with seas 1m or higher occuring as much as 60 per cent of the time in the NW and swells higher than 4m occurring slightly more than 10 per cent of the time in much of the N part of the area. Sea and swell heights are lower in spring than at any other time of the year.

Climatology

SOUTH PACIFIC OCEAN

As the climate of land depends upon its proximity to the ocean, so is the ocean's climate regulated by land distribution. Since the Southern Hemisphere lacks the large masses of the Northern Hemisphere, there are many differences in the climate of their oceans.

In the South Pacific, the result of fewer large land masses is less variability in climate, both seasonally and latitudinally, than its North Pacific counterpart. Although the South Pacific has no land protection from colder high-latitude seas, this is more than offset by the ocean's moderating effect and the lack of more than one source of cold air.

The South Pacific Ocean is generally warmer and less subject to wide variability in temperature. The lack of land also allows low pressure systems to travel a nearly circumpolar route S of 40˚S. Lows forming to the N also move SE toward this belt. This is an area of year round clouds, precipitation, and strong winds. In the Southern Hemisphere, lows have a clockwise circulation, while high pressure systems have a counter-clockwise circulation. To the N of the "roaring 40's" lies a large semi-permanent high which varies only slightly from winter to summer. It is centered closest to the Equator (30˚S) in summer.

This high pressure belt influences weather from the Equator to about 40˚S, from South America to Australia. Strong subsidence over the eastern South Pacific results in frequent good weather, except along the South American coast, where its flow over the Peru or Humboldt Current creates low stratus and fog. In the W, weather is more unstable due to convection. Convective showers are also frequent in the tropics, particularly where the two trade wind systems converge to form the Intertropical Convergence Zone (ITCZ). The ITCZ follows the sun but does not cross the Equator in the E. This is one explanation for the lack of tropical cyclone activity in the eastern South Pacific Ocean. The Australia/western South Pacific region is responsible for about 16 tropical cyclones (tropical storms and hurricanes) in an average season; these too generate a clockwise circulation.

The seasons in the Southern Hemisphere are the reverse of those to the N. Since most of the South Pacific Ocean lies S of the Equator, seasonal terms will always apply to the Southern Hemisphere seasons.

Northeastern Australia (N of 22˚N)

General.—Weather in the Australian tropics is influenced by a belt of low pressure and a semi-permanent subtropical anticyclone; the Intertropical Convergence Zone (ITCZ) also plays a seasonal role. Sometime in March or April, the subtropical high begins to push N, spreading the steady dry Southeast Trade Winds across the region. By midwinter (July) this anticyclone, which represents a series of eastward-moving high pressure systems, is dominant, with its axis near 25˚S. The tropical belt of low pressure lies to the N. Good weather prevails into October. Sometime during the spring transitional period, the high is shoved S as the low pressure belt advances. The Northwest Monsoon sets in, accompanied by intermittent, at first, then more frequent squalls. The rainy season, which can vary from year to year, usually stretches from December to April. In mid-summer (January), the high is S of 35˚S, while the belt of low pressure lies along the 20˚S parallel and the ITCZ moves S to near 10˚S. The ITCZ is a discontinuous band of showers and thunderstorms. It is also the birthplace of many tropical cyclones.

Tropical Cyclones.—These clockwise-revolving storms are infrequent, but loom as the greatest navigational weather hazard in tropical Australia. About 16 tropical cyclones (tropical storms and hurricanes) form each year across the Australia-South Pacific region (100˚E to 140˚W). On average, six or seven of these tropical cyclones reach hurricane intensity.

Australians use the term cyclone to denote tropical storm strength or greater (winds equal to or greater than 34 knots). In the N and NW they are known as "willy-willies." There are tropical cyclone centers at Darwin, Brisbane, and Perth. Each has its own area of forecast responsibility and its own list of tropical cyclone names.

The dangers from tropical cyclones include strong winds, torrential rains, and tumultuous seas. On the coast, flooding from rains and high tides is often the major cause of damage.

Winds can climb to 130 knots or more. Along the E coast a 109-knot gust was recorded at Willis Island, while one of 101 knots blew at Bowen. Hurricanes can also generate seas of 9.1m or more and tides of 3.1m or more above normal.

In the Gulf of Carpentaria there is a 50 to 60 per cent chance of at least one storm at most locations. This percentage is slightly lower along the E Queensland coast (45 to 55 per cent) and off the coast of the Northern Territory (30 to 40 per cent). While tropical cyclones can develop in any month, they are most likely from November through April.

The heart of the season is January, February, and March. November activity is unusual but most likely off the NE Queens-land coast. During December there is a chance of a storm in the Gulf of Carpentaria and along the E coast. Activity increases in January, when storms develop from the Timor Sea through the Arafura Sea, sometimes as far N as 5˚S.

Many of these tropical cyclones move SW, on a track parallel to Western Australia, to North West Cape. The cyclones that form in the Arafura Sea or the Gulf of Carpentaria tend to move SE across the Cape York Peninsula and along the E coast. February development is concentrated in the Timor Sea. These systems often move SW to about 20˚S and recurve overland near the North West Cape/Shark Bay area or turn WSW out to sea. In the N activity is slight.

Most storms tend to form E of Cape Melville and, moving well off the coast, head ESE; late in the month they may recurve toward Australia, near New South Wales. March brings an abundance of coastal storms forming from the Gulf of Carpentaria W. Early in the month, Coral Sea activity is similar to that of late February. Later, storms are more confined to the Coral Sea. April tropical cyclones are infrequent, with a slight chance of one in the Gulf of Carpentaria or the eastern Coral Sea.

Tropical activity and cyclone tracks are based on climatological patterns and trends. Actual storms can be very unpredictable.

Winds.—The winds over open water are predominantly SE from the end of April to the beginning of November and NW for nearly the remainder of the year. These general directions as well as wind speeds are greatly influenced by local topography and the land-sea breeze effect.

While gales (winds greater than 34 knots) are uncommon in these tropical waters, wind speeds of 20 to 30 knots are not. These speeds can be attained by the strengthening Southeast Trade Winds of winter, as well as the West Monsoon in summer. Along the E coast from Rockhampton, N gales are most likely from January through March, particularly S of Cairns; they are most likely off Rockhampton, where they blow up to 2 per cent of the time in March. The highest average wind speeds occur in the afternoon and run about 8 to 12 knots from April through October; on Thursday Island these speeds climb to 15 to 17 knots. Gales generated by tropical cyclones are most likely from January through March. The cause of strong winds in the Torres Strait is usually either a tropical cyclone or local squalls associated with the West Monsoon

Along the coast from Rockhampton to Thursday Island, winds are usually out of the E through S from March or April through September or October. From about November through March, there is usually a noticeable diurnal variation in both direction and speed. It is most evident at Rockhampton, Townsville, and Thursday Island, where calms occur up to 60 per cent of the time in the morning. Light W, SE, and S winds are also common along the coast during the morning hours. Afternoon winds, frequently sea breezes, often blow out of the NE through SE; at Thursday Island, W and NW winds blow from the sea, as well as being part of the West Monsoon that affects the N coast.

Precipitation.—The climate of Australia's tropical coasts is monsoonal; along the E coast the Southeast Trade Winds prevail. Most of the bad weather comes in the summer (December through April) as a result of the West Monsoon tropical belt of low pressure.

Along the E coast, January through March are the worst weather months. Under skies that are cloudy on about 15 to 25 days per month, rain falls on about 8 to 12 of these days. At exposed locations like Thursday Island and Cairns, rain may occur on up to 20 days per month and total 254 to 432mm; between Cairns and Innisfail heavy rainfall is a result of the moist Southeast Trade Winds being forced over the mountains. Tropical cyclones are mainly responsible for 24-hour amounts of 203 to 381mm. Thunderstorms occur on about 2 to 7 days per month in summer.

The N movement of the ITCZ and tropical low pressure area and the establishment of the semi-permanent high brings good weather in the winter season (May through November). Skies are clear on 10 to 20 days per month and cloudy on just one-half of that amount. August and September are the dryest months. Rain falls on 3 to 10 days per month; average amounts fall to less than 75mm throughout the season, except at Cairns. Thunderstorms are infrequent.

Temperatures.—Temperatures are consistent, with maximums in the low 30s (˚C); they climb above 32.2˚C on 5 to 15 days per month, and even less on the islands. Nighttime temperatures range from the mid to upper 20s (˚C). These minimums result in early morning relative humidities near 90 per cent. During the day they fall into the 60 per cent range.

Extreme high temperatures for the year usually occur during this period and have reached 40.6˚C to 43.3˚C, except on the islands where they remain in the mid 30s (˚C). These extremes often occur in December, which is usually less cloudy than the January through March period; however, temperatures will climb above 37.8˚C when breaks occur.

Temperatures cool off but are mostly dependent upon exposure to the sea. At the more protected locations, they range from the low 20s (˚C) during the day to around 10˚C at night, while on the islands and at the exposed coastal locations, a range from the mid to upper 20s (˚C) down to the low to upper 20s (˚C) is more common. June and July are the coolest months. Again, there is a wide range of extreme low temperatures, from near freezing at Rockhampton to 17.8˚C at the Willets Islets and Thursday Island. Temperatures do not reach the low 30s (˚C) from May through August. Where there are wide temperature fluctuations, relative humidities also vary. Morning readings from the 80 to 90 per cent range fall to the 50 per cent range by afternoon. On the islands, this minimum remains in the 70 per cent range.

Visibilities.—For the most part visibilities are good. There is some early morning radiation fog in sheltered locations. For example, visibilities at Rockingham fall to less than 2 miles on about five to ten mornings per month from April through September and below 0.5 mile on up to eight mornings. Conditions improve considerably by noon.

Heavy showers and thunderstorms can reduce visibilities briefly, but overall visibilities fall below 2 miles on only one to five mornings per month.

Southeastern Australia

General.—The weather along this coast is largely controlled by an E progression of anticyclones, which makes up a semi-permanent belt of high pressure. In. between these migratory highs are troughs and low pressure areas that bring the weather. The axis of the climatological anticyclone lies across southern Australia in winter, drifts S over the Great Australian Bight during spring, and lies S of 35˚S in summer. Gales are most likely in winter, when storms from the "roaring 40's" or the "whistling 50's" are able to penetrate N. Troughs can penetrate N to about 25˚S. Winds along these coasts are variable and usually moderate. Winters are often mild with little frost. Summer temperatures are hot and can climb to 37.8˚C or more on occasion, but low humidities reduce the discomfort. Rainfall is plentiful along the SW and SE coasts. Tropical cyclones are an infrequent but dangerous problem.

Tropical Cyclones.—Usually developing between 5˚ and 18˚S, tropical cyclones often follow a parabolic track paralleling the coastline and eventually moving inland or off to the SE. South of 40˚S, these systems often turn extratropical. Sometimes they combine with an already existing extratropical system and find new life as a vigorous low pressure system. East coast storms rarely reach the Great Australian Bight but have been sighted off Cape Howe. Early in the season they tend to move SE across Queensland from the Gulf of Carpentaria.

By late January, there is some coastal activity S to Clarence; in January there is about a 25 per cent chance of at least one tropical cyclone off Brisbane. In February, there is a 20 per cent chance near Sydney as some tropical cyclones recurve SW, across New South Wales. Late in the month and through March much of the activity is confined to the eastern Coral Sea and even coastal storms tend to move toward the SE or S.

Tropical cyclones of hurricane strength (wind speeds of 64 knots or greater) are more likely to be encountered along the E coast, particularly S of 25˚S. They are most likely in February and March. Along the W coast, chances are greatest in January and March W of the Exmouth Gulf.

Southerly Buster (or Burster).—This is the name given to the sudden burst of cold air that may accompany a summertime cold front passage along the E coast. Prior to its arrival, N winds and high temperatures prevail for several days. Just before the onset of the "buster," ball-shaped cumulus clouds, and then heavy cumulonimbus clouds gather in the SW.

Many times during the hour or so before the onset, a heavy cumulus roll, which may be 30 miles or more in length, appears low on the S horizon. As it approaches, the wind dies, then begins to whip up from a S direction, often reaching gale force in minutes. Temperatures may fall 8˚C or more.

Often the buster is accompanied by rain and sometimes by thunder and lightning. If it has been very dry, the sky may be cloudless during this change. Initial gusts generally range from 17 to 35 knots but higher speeds have been recorded at Outer North Head.

These "Southerly Busters" are most likely S of Port Macquarie, where they occur about 30 times annually; on average, 27 of these blow in between October and March.

Winds.—Because of a progression of weather systems winds are continually changing, particularly in winter. From November to April, these changes are fairly regular, correspondng to the procession of anticyclones. North of its track, winds are S to SE as the high approaches, backing to E or NE as the center passes; sometimes there is a sudden shift back to S as a new system approaches. South of the track, S to SW winds in advance of the center veer to the Wand finally NW or N as the center passes. The area which lies S of the track spreads N between January and July.

By July, most of the area S of Brisbane is under the influence of a SW through NW flow. Later in the year, the area of prevailing W winds recedes S and winds from the NE through S become dominant by January.

Gales are most likely during June and July, when they are encountered 5 to 12 per cent of the time in the waters off these coasts; off Carnarvon they blow less than 2 per cent of the time year-round.

Gales are most likely off the Indian Ocean coasts of Tasmania; they blow 8 to 12 per cent of the time in June and July. Gales are least frequent in summer (January and February). They are encountered less than 5 per cent of the time and in many areas less than 1 per cent. Spring is a quiet time off Brisbane.

Coastal winds are complicated by local topography and the land-sea breeze effect. In general, there is a tendency toward S and E winds in summer, with N and NW winds becoming frequent in winter. Early morning summer winds are often light and variable; sometimes they blow off the land. Wind speeds average 4 to 8 knots, and are about 6 knots higher on the exposed capes.

Along the E coast, NE through SE winds at 10 to 12 knots are common. Gales at coastal locations are infrequent in summer and would most likely result from a rare tropical cyclone, or a Southerly Buster S of Port Macquarie along the E coast.

As winter approaches, winds get stronger and their diurnal change becomes less noticeable. They are influenced by S extratropical storms as well as passing anticyclones. Along the E and S coasts, winds blow mostly out of the S through NW, with occasional NE winds. Wind speeds average 8 to 10 knots along the E coast and 8 to 16 knots in the S.

Precipitation.—Along the E coast, average annual amounts range from 890 to 1,143mm, with a summer peak N of Coffs Harbor and a slight autumn peak to the S. Nearly 1,270mm falls on the W coast of Tasmania. The more uniform distribution along this coast results from the intensification of the Southeast Trade Winds. Rain falls on 8 to 15 days per month.

While not frequent, snow falls as far N as 31˚S in winter. It usually melts on contact, except in the mountains.

Thunderstorms are likely along the E coast. At Sydney and Brisbane they occur on 30 to 40 days annually with a peak in late spring and summer. Elsewhere they pop up on about 5 to 16 days annually.

Cloud Cover.—Cloud cover varies like rainfall. Along the E coast cloudy skies occur on the average of 18 to 20 days per month from December through March, while clear days are observed on 15 to 20 days per month in winter. Along the S coast summer skies are clear on 15 to 20 days at most locations; Melbourne and Tasmania have about 5 fewer clear days each month. From fall through spring skies are cloudy along the S coast on 10 to 20 days per month; Tasmania records these

frequencies throughout the year with slight peaks in spring and fall.

Temperature.—Temperatures vary with latitude, season, and exposure. During the summer from Brisbane N, on the E coast, and at sheltered locations along the S coast, daytime highs climb into the upper 20s to low 30 (˚C), with nighttime lows ranging from the mid teens to low 20s (˚C). Along the E and S coasts, temperatures reach or exceed 34˚C on about 20 to 30 days each season at sheltered locations. At spots exposed to cooling sea breezes, 34˚C temperatures occur on less than 15 days each season; on Tasmania, this figure drops to 1 to 2 days. However, in most places, extremes have topped the 37.8˚C mark. The winter season brings daytime highs in the mid to upper teens (˚C), except for the low teens (˚C) on Tasmania. At night, temperatures drop into the low single digits to low teens (˚C); the coolest temperatures are recorded in the SE. Temperatures drop to freezing or below on 5 to 15 days each season along the Victoria coast and the E coast of Tasmania; elsewhere they are infrequent. Extremes range from just below freezing along the S coast to the low single digits (˚C) in the more N latitudes.

Visibility.—Visibilities are generally good to excellent. Sometimes rain drops visibilities below 2 miles, but rarely below 0.5 mile. Radiation fog may develop towards dawn in a few coastal locations, but this clears before noon.

From Sydney to Cape Northumberland, fog occurs from March through October. By far, the worst area is near Sale, where visibilities in the early morning drop below 0.5 mile on 55 days annually; this includes about ten to 16 mornings per month in winter.

In the S, summer winds from the N bring a reddish dust haze to coastal regions. With sufficiently strong offshore winds, particularly following a prolonged drought, a thick dust storm can affect visibility for a considerable distance out to sea.

New Zealand

General.—The climate of New Zealand is determined mainly by its location. With Australia some 900 mi to the N and Antarctica even farther to the S, the expanse of surrounding sea ensures a mild winter and cool summer. Large deep extratropical storms travel relentlessly eastward on a track just S of about 50˚S with frequent troughs extending northward across New Zealand. Secondary centers often develop along associated fronts and generate strong winds, rough seas, and heavy rain. Occasionally, tropical cyclones move into the New Zealand area. An extensive mountain barrier along almost the whole length of the interior produces differences in wind and weather between the W and E coasts. While rainfall is plentiful the topography produces an uneven distribution.

Cyclones and Cold Fronts.—Day-to-day weather is controlled by the migratory anticyclones and the low pressure troughs which lie between them. These troughs nearly always contain a cold front, separating warm moist subtropical air to the E and cold maritime air to the W. Weather associated with the front is heavy rain showers, possibly thunderstorms, strong surface winds, and rapid temperature changes. These fronts are usually oriented NW-SE and move NE. The southernmost portion of the front is often connected to a circumpolar low.

The storms, often secondary centers, that pass over or close to New Zealand, form along these fronts. The more intense storms, called cyclones in New Zealand, generate gale-force winds, rough seas, and heavy rains. The tracks of these cyclones are usually E or SE. Cyclones traveling E often pass S of Stewart Island and are most severe from Foveaux Strait to Cook Strait, but their effects can be felt throughout New Zealand. Cyclones moving SE often cross theN portion of South Island, or, less frequently, pass E of North Cape and along the coast of North Island to East Cape. Occasionally, these storms pass directly over North Island.

Tropical Cyclones.—Occasionally a tropical cyclone may affect New Zealand. They are most likely to cross North Island; however, South Island is not invulnerable. Sometime these systems have acquired extratropical characteristics by the time they reach these latitudes, but they can still generate strong winds, rough seas, and torrential rains. Most tropical cyclones are headed S, SE, or E. Probabilities range from 15 to 30 per cent of at least one tropical cyclone affecting some part of New Zealand in a given year, an average of about one every 3 to 6 years. They can occur in any month, but are most likely in New Zealand waters from mid-January through mid-February and again in March.

Winds.—Weather is greatly influenced by prevailing winds. Frequently the weather is referred to as “northwesterly day” or “southeasterly weather.” During the winter in advance of a cold front moist NW winds bring overcast skies along the W coast of South Island but few clouds to the sheltered E coast. Over the less mountainous North Island, clouds penetrate most regions except the coast from Hawke Bay to the S part of the Bay of Plenty. When W winds follow a cold front, pre-frontal showers are generated along the W coast of South Island and on the E coast as far N as Dunedin. Steady rains fall along North Island’s W coast N of Levin, while on the E coast between Dunedin and East Cape ,the frontal passage is often marked only by a local wind shift and pressure change. Northwest winds behind the primary cold front can spread considerable precipitation from Stewart Island across Foveaux Strait and N along the W coast of South Island. The E coast is usually unaffected N of Dunedin. North Island weather consists of scattered heavy showers as far N as New Plymouth, with decreasing activity to the N. Fair skies usually prevail to the E.

Southerlies usually refer to SE, S, and SW winds. Any of these winds may bring cold rainy weather, replacing warm fair weather. This change is usually marked by a dark line of clouds and sharply increasing winds. Temperatures fall rapidly and heavy rain or sometimes thunderstorms with hail are present. Although less apparent in some sections, the change generally engulfs all of New Zealand.

Gales blow up to 13 per cent of the time in coastal waters and 20 to 30 days annually at the more exposed coastal locations. March through October is usually the worst time. In the waters around Stewart Island, including the Foveaux Strait, winds reach gale force 10 to 13 per cent of the time. At Invercargill, winds climb to 28 knots or more on 2 to 3 days per month year round, except 4 days in October on the average. In other coastal waters gale frequencies average 5 to 10 per cent from autumn through spring with a peak usually during winter. However, through the Cook Strait this peak usually occurs in spring. Gales in the open waters of Cook Strait are encountered about 10 per cent of the time from September through December. At Wellington, winds of 28 knots or more are reported on up to 3 days in October on the average. At coastal locations that are sheltered, such as Nelson in Tasman Bay and Napier in

Hawke Bay, gales blow on less than 10 days each year. This compares to exposed Campbell Island to the S, where winds reach 28 knots or more on an average of 68 days annually.

While New Zealand lies in a belt of prevailing westerlies, this is often marked at coastal locations by local influences. Most noticeable is topography. Sheltered by mountains some areas experience weak winds with frequent calms. Through the Cook and Foveaux Straits there is a funneling effect resulting in strong winds and a preponderance of NW and SE winds. From Jacksons Bay S, there is a tendency for winds to be deflected around Puysegur Point, where they join with frequent W and SW winds common to S sections of South Island. Farther N, they may appear as S or even SE winds, conforming to the land. Land and sea breezes are fairly extensive, especially when pressure gradients are slack. The sea breeze sets in about mid-morning and is relatively strong until sunset. At night, the land breeze is usually weaker, but can be a problem along steep coasts where a drainage effect is produced. During periods of strong W winds aloft, foehn winds often develop along the lee slopes of the Southern Alps during the afternoon; less frequently this occurs on the North Island also. These winds frequently exceed gale force and continue well into the night.

Strong winds, in fact most winds, in Cook Strait blowout of the NW or SE. Gales are frequent and violent, often accompanied by dark clouds and lightening. Mean speeds of 15 to 16 knots are common, with speeds exceeding 22 knots 20 to 30 per cent of the time. Gales blow up to 10 per cent of the time and are most likely during winter and spring. These winds are local and the harbors that indent the shores are usually well protected. The head of Tasman Bay is remarkably free of strong winds and frequently enjoys fine, calm weather, while a gale is blowing in Cook Strait.

Foveaux Strait is also vulnerable to strong winds. Gales blow 5 to 15 per cent of the time, while winds exceed 22 knots 25 to 35 per cent of the time. Summer is usually the best season. Southwest through NW winds are most frequent.

Although tornadoes are rare, they do occur. As defined by New Zealanders, tornadoes include waterspouts, funnel clouds, and localized storms with damaging winds; this is a definition much broader than that used in the United States. Tornadoes are most likely in regions of severe thunderstorm activity and during the afternoon. Most are associated with cold fronts, particularly those with a strong SW flow. The most severe occur from May through October with the greatest frequencies near the W coasts.

Precipitation.—Rainfall amounts are plentiful, but uneven, due to the mountains. The W coast of South Island records 2,540 to 5,080mm annually, while the E coast from Christchurch to Dunedin is usually the driest, with 508 to 1,016mm. While precipitation varies little with season, there is a slight winter and spring maximum at some locations. Along the W coast of South Island precipitation falls on 100 to 200 days annually with a range of about 10 to 20 days per month. North of Dunedin, about 100 to 175 rainy days are recorded each year. The North Island has a more uniform distribution with a winter maximum and summer minimum; seasonal variations over South Island are more erratic. Precipitation amounts along the North Island coasts range from 889 to 1,651mm, with the highest amounts in the N. Days with precipitation range from about 140 to 200 days annually.

Snow is infrequent at low elevations throughout New Zealand and generally melts soon after it falls, except on the E side of South Island, where a snow cover sometimes persists for a few days.

Thunderstorms are infrequent. They are increasingly less common from N to S and from E to W. An average of about 20 thunderstorms in the extreme N decreases to about two to five each year along the E coast of South Island. Winter and spring are the more favored times of year in the N; elsewhere there is little seasonal preference.

Temperature.—Temperatures are also influenced by topography. Seasonal and diurnal variations are small along the coasts. Mean daily maximums are generally highest on North Island, ranging from the low 20s (˚C) during the summer to the low teens (˚C) in winter. Minimums remain above freezing in winter. Mean daily maximums along the South Island coasts range from the upper teens to low 20s (˚C) in summer to the upper single digits to around the freezing mark (˚C) in winter. Minimums range from the just below freezing to the freezing mark (˚C), with up to 70 days annually of below-freezing temperatures at some locations.

Cloud Cover.—Cloudiness is related to the topography, with the windward slopes experiencing the greatest amount of cloudiness. With the air flow mainly from the W, it is usually cloudiest along the W coasts, with a minimum along the E coasts.

Convective-type clouds are predominant so maximum cloudiness generally occurs in the afternoon with a nighttime minimum. Good clear periods along the coasts and adjacent waters occur with the anticyclones, while widespread thick clouds will prevail during frontal passages. There is often a marked difference, however, between the W and E coasts, as descending air on the lee side tends to disperse clouds.

Average cloud amounts increase S of about 45˚S, where the moist W winds become more persistent.

Visibility.—Visibilities are usually good. Low clouds may obscure the coastline at times and visibility is often reduced below fog limits in heavy rain for short periods.

Radiation fog occasionally forms over estuaries around dawn, on calm clear nights, and may drift a mile or so out to sea. This usually clears soon after sunrise.

Sea fog is unusual since the sea is usually warmer than the air above.

TROPICAL PACIFIC ISLANDS

General.—Because of the vast ocean area and the small land surface, the most noteworthy characteristic of this region is the monotonous uniformity of the weather throughout the year and throughout much of the area as well. The influence of strong insolation and isolation from any cold source is reflected by sea surface temperatures that exceed 21˚C year round. This moderating effect is evident in the air temperatures as well. Only S of l5˚S and N of l0˚N are there noticeable seasonal changes.

The climate is dominated by two great air streams, which originate in the semipermanent high pressure belts of the North Pacific Ocean and the South Pacific Ocean and converge toward the equatorial low pressure trough. They meet along the Intertropical Convergence Zone (ITCZ), which migrates N and S with the sun. Long overwater trajectories of this air results in climates of high temperatures and humidities, abundant cumu-

lus clouds and frequent, sometimes heavy rain showers. An important feature of the climate are the tropical cyclones that roam the waters S of the Equator E to about l40˚W and N of the Equator everywhere.

Intertropical Convergence Zone (ITCZ).—This discontinuous band of clouds, showers and thunderstorms is formed by the convergence of Northern Hemisphere NE winds with Southern Hemisphere SE winds. Lying roughly E-W, the ITCZ can vary from 50 to 200 miles in width. Its intensity can vary from scattered clouds to torrential downpours. Its position can fluctuate daily, but in general it follows the movement of the sun. West of 150˚W, the ITCZ moves back and forth across the Equator while, to the E it ranges between 12˚N during the S winter and the Equator in summer. Many tropical cyclones, both N and S of the Equator, are spawned in the ITCZ.

During the Southern Wemisphere winter (June through October), the ITCZ is N of the Equator everywhere. It reaches its northernmost position during July through September and the entire region N of the Equator is active. Towering cumulus and cumulonimbus clouds, moderate to heavy showers and thunderstorms, and maximum tropical cyclone development are the characteristics. The ITCZ retreats S from October on. During the most active period, generally from July through October, periodic wave-like deformations, known as easterly waves, are generated in the Northeast Trade Winds of the E central Pacific. As they move W and slowly intensify, they bring clouds and rain to the entire area. Sometimes they form cyclonic vortices and develop into tropical cyclones.

During summer (December through March), the ITCZ moves into the Southern Hemisphere E to about 150˚W, where it crosses the Equator and remains to the N. The ITCZ usually makes its deepest penetration by February in the Wand by March in the E. Intermittent but often heavy showers occur throughout the zone. Thunderstorms are more frequent than they were in winter, except near the Equator, and precipitation is greater except where topography exerts a strong influence. The ITCZ also serves as a spawning ground for tropical cyclones in the Southern Hemisphere.

Tropical Cyclones.—North of the Equator, tropical cyclones (winds equal to or greater than 34 knots) have been encountered from the Philippine Sea to the E limits of the area. To the S, tropical cyclones are rare E of about 150˚W.

The western North Pacific has spawned tropical cyclones in every month. They are most likely from July through October and least likely from December through April. About 27 tropical cyclones develop each year, on the average, and some 17 of these attain typhoon strength (winds equal to or greater than 64 knots). Several of these reach the supertyphoon state (winds equal to or greater than 130 knots). A mature typhoon may grow to 600 miles in diameter, generate winds of 150 knots or more, seas of 12.2m, and torrential rains. They can wreak havoc from Wake Island to the western Caroline Islands. Tropical cyclones can also generate a storm surge that may result in tides 3.1 to 4.6m above normal.

From January through April, tropical cyclone activity is mostly confined E of the Philippines between 5˚ and 20˚N. From May onward, this activity spreads N and W by August its center stretches from Luzon to Honshu. In the fall (Southern Hemisphere spring), the area of activity begins to shrink, until by November its concentrated just E of the Philippines. Supertyphoons are usually limited to the NW edge of the area; the Mariana Islands are occasionally raked by these storms. In general the Mariana Islands and the western Caroline Islands are more vulnerable to tropical cyclones than the eastern Caroline Islands and Marshall Islands. On the average, between July and October, at least one typhoon will pass through or near the Mariana Islands and two through the western Caroline Islands. The Marshall Islands and northern Kiribati (Gilbert Islands) lie on the fringe of the tropical cyclone activity. Storms are often in their formative stages in these areas. Kiribati (Gilbert Islands) is too far S and the Marshall Islands are most likely to be affected from September through December; a tropical cyclone will affect these islands about once every 3 years on the average.

Eastern North Pacific tropical cyclones, referred to as Central North Pacific storms when they form between 160˚W and 160˚E, are unlikely S of 10˚N; E of 160˚W they are unusual S of 15˚N. However, there is always the possibility of an errant storm affecting the N part of this area. This would be most likely in August or September when they make their farthest W penetration.

South of the Equator, tropical cyclones roam from Papau New Guinea past the Society Islands; however they are rare E of 150˚W. In March 1975, Cyclone Alison blew over New Cale-donia, where sustained winds of 103 knots with gusts to 119 knots were reported at Baie Ugue. Farther E, Cyclone Bebe, an out-of-season October hurricane, devastated Kiribati (Gilbert Islands), Tuvalu (Ellice Islands), and Fiji. Winds exceeding 150 knots were reported.

The South Pacific tropical cyclone season generally runs from December through April, although they can form in any month. January, February, and March are the most active months. From E of about l00˚E, an average of 16 tropical cyclones occur each year; six of these become hurricanes. They usually form between 5˚S and 15˚S between New Guinea and 180˚. Initially, they tend to move toward the S or SW, then recurve toward the SE or E.

Early season activity is concentrated between the Solomon Islands and Fiji. During January and February, these storms usually originate in the northern Coral Sea, near Fiji or Vanuatu (New Hebrides). Moving ESE or SE, they are most likely to be encountered between Vanuatu (New Hebrides) and New Caledonia. Except for some activity around Samoa, March storms tend to remain in the Coral Sea. April tropical cyclones often move from the Coral Sea to between New Caledonia and Vanuatu (New Hebrides) southward through the western South Pacific.

Tropical cyclones are most likely in the Vanuatu (New Hebrides)/New Caledonia region, which is affected by two to three storms each year on the average. Fiji and the southern Solomon Islands can expect one to two storms in an average season. About 1 storm each year affects Samoa, while the Cook Islands are hit about once every 2 years or so. To the E frequencies fall progressively lower although they have on occasion affected the Society Islands, lIes Tubuai, and the Tuamotu Archipelago.

Winds.—The general air flow throughout this region can be traced to the trade wind regime. During the Southern Hemisphere winter (June through October), the Southeast Trade Winds emanating from the South Pacific high gradually veer to a more S flow upon crossing the Equator and invade the Caroline Islands, the Marshall Islands, and Kiribati (Gilbert Islands). By the time it reaches these islands, the winds are

often out of the SW to W. To the S of the Equator, the Southest Trade Winds remain remarkably steady. The islands poleward of about 20˚S are occasionally invaded by the W winds that prevail to the S. In summer (December-March), NE winds originate in the North Pacific high and in the W regions in the Siberian high, and encroach S of the Equator. Northeast winds prevail over most of the area, except over and W of New Ireland where they are N or NW and E of about 150˚W where they remain E and SE. This trade wind system is steady, with average speeds of 8 to 12 knots. In some areas, the trades will strengthen at times to near gale force.

Gales throughout this tropical region are rare. They are usually generated by tropical cyclones or occasionally by thunderstorms. The periodic strengthening of the trades increase speeds to near gale force but rarely above it.

Local winds are created by an interruption of the general flow. North of the equator, because of the small size and height of many of the islands, land and sea breezes are almost completely absent. Only a few islands are mountainous enough to disrupt the prevailing trades. North of the equator the NE trades are by far the steadiest and strongest with wind constancies from 70 to 90 per cent and average speeds of 5 to 15 knots. The SE winds and their components are less steady and weaker. Calms or light and variable winds are prominent at most locations when the ITCZ passes through, once known as the doldrums.

The islands S of the Equator have a more complex topography and, coupled with a light to moderate wind flow, produces an endless variety of directions and speeds. While over water winds are relatively constant and average 8 to 12 knots, land and sea breezes effect changes on many islands. Strong katabatic (downslope) winds are also reported where mountains border the coast. Sea breezes are most prevalent in the lee of larger islands such as at Nandi in the Fiji Islands. Many of the islands to the E are low and flat and exert little local influence.

Over New Guinea and the Solomon Islands winds blowout of the W through N 40 to 60 per cent of the time from December through February, while E and SE winds prevail from May through October. Winds are variable, with frequent calms, during the transitional periods when the ITCZ passes through. Sheltered coastal locations are susceptible to land and sea breezes; in a few places where mountain valleys reach the coast, strong local winds are often observed. The best known is the “guba” at Port Moresby, which may occur up to five of six times each year, during any season. It is an early morning wind, usually lasting 20 to 30 minutes and reaching speeds of 50 to 60 knots (Port Moresby is just outside the region).

East and SE winds prevail year round over Vanuatu (New Herbrides), the Santa Cruz Islands, New Caledonia, and the Loyalty Islands. Speeds average 10 to 12 knots from May through November and 5 to 10 knots at other times. In February and March the ITCZ reaches the Vanuatu (New Hebrides)/Santa Cruz Island area. Light winds and calms are occasionally interrupted by 15 to 20 knots squalls. Gales are infrequent but most likely with tropical cyclones.

In the islands E of about 170˚E, the Southeast Trade Winds are dominant through most of the year. Between 170˚E and about 150˚W, the ITCZ moves S of the Equator; behind it NE winds blow on the islands closest to the Equator in summer. East winds remain the prevailing winds throughout the islands. Northeast winds penetrate to about 125˚S to 15˚S during this season. To the W of 180˚, a belt of variable W winds has been reported at times between the two converging trade wind systems.

On the larger and more mountainous islands, local effects are well pronounced. For example at Nandi, on the W coast of Vitu Levu, Fiji, winds are mainly calm or SE in the early morning but afternoon W sea breezes predominate throughout the year. However, at Suva, on the SE side, E and SE winds prevail with little diurnal variation. At Christman Atoll, E winds blow 70 per cent of the time year round. Similar frequencies can be found for Fanning Island, Baker Island, the Phoenix Islands, and Tokelau. On the larger Samoan islands of Upolu and Savai’i, diurnal changes are evident leeward of the track winds, usually on the W coasts. The rugged terrain of the Marguesas Islands also obstruct the trades; land and sea breezes are prevalent on the sheltered sides of the islands. The Society Islands lie in the path ofthe Southeast Trade Winds, but because of terrain effects, winds are quite variable on the N and W coasts. At Bora-Bora and Papeete, winds average about 5 knots with a high percentage of calms; 20 to 30 per cent with summer frequencies highest. Southeast Trade Winds do not usually extend to Rapa and Pitcairn Island. Winds are more variable at the S locations, with NW to N winds common from fall through spring and NE winds predominant in summer. Calms are less frequent than farther N. Gales occur up to 5 per cent of the time at Palmerston Island, Rurutu, Rikitea and Pitcairn Island; gales are most likely from June through August.

Climate.—Information on individual islands and island groups is given, as follows:

1. **Mariana Islands.—**Within these islands, which lie just N of the maximum rainfall belt, annual rainfall amounts decrease erratically from S to N. In the S amounts range from 2,160 to 3,050mm annually compared to near 1,780mm in the N. The principal rain and cloud producers are the Intertropical Convergence Zone (ITCZ), E waves, and tropical cyclones. Maximum 24-hour amounts of near 229mm have been recorded. July through October is the rainiest and cloudiest period. Showers and cloudy skies are reported on 20 to 27 days per month. December through June is the driest period, but clear skies are still infrequent, except at night.

   Temperatures are usually highest in June before the onset of the cloudy season. With an annual range of only 1.5˚ to 3.9˚C, daytime highs reach the upper 20s to low 30s (˚C), with nighttime lows in the low to mid 20s (˚C). Coolest temperatures occur in January and February during the height of the Northeast Monsoon. Extremes range from near 38˚C to just below 16˚C.

   Relative humidities are high year round, averaging 85 to 90 per cent in the early morning and 60 to 70 per cent by afternoon; the lowest values occur from March through May.

   Visibilities are usually good; they drop below 6 miles less than 10 per cent of the time. They are poorest in showers or thunderstorms.

   Thunderstorms only occur on about 5 to 20 days annually and are most likely from July through October.

2. **Caroline Islands.—**Most locations, except for outlying Tobi Island, record annual rainfall amounts in excess of 2,540mm, and many in excess of 3,550mm. Wet and dry periods are apparent in and W of the Truk Islands, where January through April reflect the intrusion of dry NE winds. Pre-

cipitation is generally heaviest during the evening hours. Maximum 24-hour amounts range from 152 to 560mm and can occur in any month, although the heaviest amounts are more likely during the typhoon season. The eastern Caroline Islandss receive the heaviest and most evenly distributed rainfall because of their position outside the monsoonal flow and the small latitudinal sweep of the ITCZ in this region. Mean annual totals can range up to 250 inches in this area. Rain falls on 150 to more than 300 days each year. Throughout the island group extreme fluctuations in rainfall occur from year to year.

The Caroline Islands experience the most uniform temperatures of all the island groups because of their E- W orientation, their nearness to the Equator, and the high frequency of cloud cover year round. Cloud cover in excess of 70 per cent is common most of the year. Mean daily maximum temperatures climb into the low 30s (˚C) with mean daily minimums in the mid 20s (˚C); both vary no more than 1.5˚C between warmer and cooler months. Throughout the Caroline Islands, extremes in the low to mid 30s (˚C) and high teens to low 20s (˚C) have been observed.

Relative humidities are high year round with readings in the 80 to 90 per cent range in the early morning and 70 to 80 per cent range during the early afternoon.

Visibilities are good to excellent at most locations. They drop below 2 miles 1 per cent or less of the time. This is most likely in torrential downpours. However, at Falalop, visibilities fall below 6 miles 20 to 50 per cent of the time during the night, remaining below that level 5 to 15 per cent of the time during the day.

Thunderstorms are more likely in the W islands than in the E part. They occur on up to 22 days annually at Koror and on about 10 days annually at Ponape; they are most likely from May or June through December.

3. **Marshall Islands.—**Precipitation is abundant and is fairly evenly distributed throughout the year. Since the islands and atolls are less mountainous than the eastern Caroline Islands, there are fewer local differences. Mean annual amounts range from 1,400 to 4,060mm increasing from N to S. The southern Marshall Islands are influenced more by the ITCZ in summer while the N sections are influenced more by the drier Northeast Monsoon in winter; the northern Marshall Islands receive 60 to 85 per cent of their rainfall from about July through November. Rain falls on about 200 to 300 days annually.

Even though the Marshall Island chains are N-S oriented, there are little regional temperature differences. Very cloudy conditions in the S restrict the annual range of mean maximums and minimums to less than about a couple of degrees. In the N where partly cloudy skies prevail, an annual range of about 2.5˚C is common. However, most locations record mean daily maximums in the low 30s (˚C) and mean daily minimums in the mid 20s (˚C). Extreme highs have exceeded 38˚C only at Jaluit Atoll and lows have dipped to 19˚C on Kwajalein Atoll.

Cloudy conditions occur on about 20 to 25 days per month in the southern Marshall Islands and 10 to 20 days per month in the northern Marshall Islands. However, completely overcast skies are uncommon and usually short lived.

Relative humidities, while high, are lower than they are elsewhere. Early morning readings in the upper 70 to mid 80 per cent range are common, while afternoon readings usually fall into the low to mid 70's.

The visibility is generally excellent, falling below 6 miles less than 10 per cent of the time.

Thunderstorms, which can lower visibilities to a few hundred meters for a short period of time, are likely on about 16 days or less annually, with a peak from about July through October.

4. **Wake Island and Johnston Island.—**On these isolated islands, rainfall is drastically reduced; 915mm on Wake Island and 685mm on Johnston Island fall in an average year. Both, situated in the heart of the Northeast Trade Winds, undergo a wet and dry season. When the trades are best developed, generally January through March, is Wake Island's dry season; the wet season runs from July through October. However, on Johnston Island, occasional weak polar fronts make their way S to bring some January rainfall; June and July receive the lowest amounts.

Skies are cloudiest from July through October at Wake Island and in April and May at Johnston Island.

Temperatures at Wake Island and Johnston Island are similar to those in the Marianas; they are also subjected to infrequent invasions by weak polar fronts, when temperatures fall about 2.5˚C from normal. Mean daily maximums range in the low to upper 20 to low 30s (˚C), with the warmest period from July through October, while minimums fall into the mid to 20s (˚C).

Relative humidities are low compared to the other islands. Early morning readings arefrom the mid to upper 70 per cent range, while afternoon readings are in the mid 60 to low 70 per cent range.

Visibilities below 6 miles occur less than 5 per cent of the time.

Thunderstorms are infrequent; at Wake Island, where they are more likely, they occur on about 5 days annually.

5. **New Guinea and the Solomon Islands, including the Santa Cruz Islands.—**Rainfall is heavy and frequent, with annual amounts ranging from 1,900mm to more than 6,350mm annually. Maximum 24-hour amounts have exceeded500mm in several locations.

Topography is important in determining rainfall amounts and rainy seasons. For example, Talasea, on the N side of New Britain, is exposed to the NW summer flow while Lindenhafen Plantation, on the S side, is exposed to the SE flow of winter. Talasea averages 500 to 800mm per month from December through April, while Lindenhafen Plantation records 150 to 280mm. In contrast, Lindenefen Plantation averages 500 to 1,000mm per month from May through October, while Talasea records 100 to 200mm.

Tropical cyclones and thunderstorms add to the torrential nature of the rains. Thunderstorms occur on about 50 to 90 days annually. They are most likely during winter and spring, except where exposure is to NE winds. Rain can be expected on 130 to near 300 days annually.

Skies are usually cloudiest during the passages of the ITCZ and, on the larger islands, during the season of the onshore monsoon. This is primarily convective cloudiness and is most likely during the late morning and early afternoon.

Temperatures and relative humidities are consistently high throughout the year. Mean daily maximum temperatures range from the upper 20s to low 30s (˚C), with a slight peak

in spring (October-December), while mean daily minimums run in the low to mid 20s (˚C). Extremes of 38˚C and the upper teens (˚C) are common.

Relative humidities range from the low 70 to low 80 per cent range during the morning to the upper 60 to low 80 per cent range during the afternoon. The diurnal variation is usually less than 10 per cent.

Visibilities are good except in showers, when heavy rain may reduce them to a few hundred meters. In dry weather, haze occasionally reduces visibility to between 3 and 6 miles.

6. **Vanuatu (New Hebrides), New Caledonia, and the Loyalty Islands.—**While rainfall amounts vary widely the rainy season generally runs from December or January through April, when up to 500mm per month is common at some locations. July through November is usually the dry season. Rain can be expected on 70 to more than 200 days annually. The rainy season is also the cloudiest time of year and, as in many tropical Pacific Island groups, clear conditions are uncommon throughout the year. However, clouds are least likely late at night.

Thunderstorms are not frequent, particularly over the low lying islands.

Temperatures and relative humidities are constantly high but show more of a seasonal variation than those islands closer to the Equator. December through March is the warmest season, when mean daily maximums climb to the upper 20s (˚C) during the day and mean daily minimums fall to the low 20s (˚C); extremes reach the low to mid 30ss (˚C). During the winter (June through September), mean daily maximums range from the mid to upper 20s (˚C), with a definite increase to the N. Nighttime lows average in the low 20s (˚C) in the S to the low 20s (˚C) in the N. Noumea once recorded an 11˚C reading in July.

Relative humidities also show both diurnal and seasonal variations. During the summer they reach to 80 to 90 per cent range at night and fall to the 70 per cent range during the day. In winter readings fall off by about 10 per cent at night and about 5 per cent during the day.

Visibilities are usually good, although haze may reduce it to 4 to 6 miles during a dry spell. Heavy showers cause short periods of low visibilities.

7. **Fiji and Tonga.—**Rainfall amounts vary from about 1,500 to 3,800mm annually along the coasts of these islands. This falls on an average of 125 to 250 days each year. The wide range is due mainly to topography and exposure. In general, the rainy season runs from June through September. Heaviest rains occur in tropical cyclones. In winter, a local convergence zone generally about 600 miles NE of the Fiji Islands may occasionally move down over the area, bringing clouds and rain. Thunderstorms are most likely from November through April.

Cloud cover corresponds with the rainy and dry seasons and is also dependent upon exposure. Cloudiness is more likely during the afternoon.

Temperatures are pleasant year round. In general, mean daily maximums are in the upper 20s to low 30s (˚C) in summer and the upper 20s (˚C) in winter. Mean daily minimums range from the low to mid 20s (˚C) in summer to the upper teens (˚C) in winter. Extreme maximums stay below 38˚C, while extreme minimums remain above 10˚C.

Relative humidities are also higher in the summer. Nighttime readings in the 85 to 90 per cent range are common compared to 80 to 85 per cent in winter. During the day, readings fall into the 70 per cent range in summer and the 60 to low 70 per cent range in winter.

Visibilities are 12 miles or more about 80 per cent of the time. The most serious reductions are caused by showers, thunderstorms, and tropical cyclones. Haze is common from July through September, but rarely reduces visibilities to below 3 miles.

8. **Kiribati (Gilbert Islands) and Tuvalu (Ellice Islands), including nearby islands.—**December through March is the most likely time for frequent and heavy rains; these are associated with the ITCZ. Annual rainfall amounts vary from 1,270 to 1,99mm on 125 to 160 days in Kiribatu (Gilbert Islands) and about 2,030 to 4,060mm on 200 to 250 days in Tuvalu (Ellice Islands).

Thunderstorms are recorded on up to 20 days annually. While they are most likely during the rainy season, they also occur in winter.

Clouds are most abundant during the rainy season, with a minimum from about August through November. During the rainy season, cloudy skies are observed on about 15 to 20 days each month; they are less frequent at night.

Temperatures vary only a few degrees throughout the year. Average daytime highs are in the low 30s (˚C), while nighttime lows dip into the low to mid 20s (˚C). Extremes range from near 38˚C to 15.6˚C.

Relative humidities remain fairly high year round, although it is somewhat drier in from August through November. Nighttime readings climb into the mid to upper 80 per cent range and the low 80 per cent range in spring. During the day relative humidities fall into the 70 per cent range, dropping to the mid to upper 60 per cent range, particularly in Kiribatu (Gilbert Islands), in spring.

Fog is uncommon and visibilities are usually good. Heavy rains occasionally reduce visibilities to less than 1 mile for a brief period.

9. **Howland Island, Baker Island, and the Phoenix Islands.—**These islands lie in what is known as the dry zone. Canton, for example, records 584mm of rainfall in an average year and it is reported that Howland Island and Baker Island are dry. This dry zone extends across the entire region of the eastern Pacific Ocean from about 3˚N to 5˚S and most stations record less than 625mm annually. The boundary of this zone can fluctuate from year to year so that Canton has recorded as much as 1,600mm in a single year and as little as 200mm. Rain falls on about 100 days annually with April through August being the rainiest period.

Thunderstorms are infrequent, but are most likely during the rainy season; Canton records about five annually.

December through February is slightly more cloudy than the rest of the year, although cloudy skies are infrequent, occurring less than 15 per cent of the time. Clear skies are observed from 20 to 50 per cent of the time, with a peak in September and October.

Temperatures are faily constant throughout the year. Mean daily maximum temperatures range from the upper 20s to low 30s (˚C), with nighttime lows dipping into the mid to upper 20s (˚C). Extremes range from about 38˚C down to 21˚C.

Relative humidities are in the 80 per cent range at night, except in spring, when they frequently dip into the upper 70 per cent range and fall into the 60 to 70 per cent range during the afternoon; in spring these readings are at their lowest also.

Visibilities are good. They fall below 2 miles less than 1 per cent of the time at sea; fog is also rare over the islands. Visibilities are restricted mainly in heavy showers.

10. **Tokelau, Samoa, and Niue.—**Rainfall is variable throughout the islands depending upon exposure and topography. Annual amounts range from 2,030mm to more than 4,800mm October through April is usually considered the rainy season although even in other months rainfall is substantial. Rain can be expected on 15 to 20 days per month during the wet season. Record amounts in 24 hours have totaled up to500mm. These are most likely in rare tropical cyclones or in the ITCZ.

Thunderstorms are observed on about 20 to 40 days annually and are more frequent here than in most of the other island chains. They are well distributed throughout the year, with a slight peak during the spring and summer.

Skies are cloudiest from November through February. Cloudy conditions at sea are encountered 20 to 30 per cent of the time. From June through August, when cloudiness is at a minimum, skies are clear from 20 to 30 per cent of the time.

Temperatures show little seasonal variation but a 4˚ to 8˚F diurnal variation. Daytime highs range from the low to upper 20s (˚C), on the average, while nighttime lows dip into the upper teens to low 20s (˚C). Extremes range from just below 38˚C down to the low 20s (˚C), except on Niue Island, where extreme lows have reached the low teens (˚C).

Relative humidities also show little seasonal variation and much more variability from day to night. During the night they climb to the 80 to low 90 per cent range, falling during the morning, until they reach the 70 per cent range by early afternoon. Spring is slightly drier than the rest of the year.

Visibilities are good and fog is seldom observed. Poor visibility is mainly associated with showers. At sea, visibilities fall below 2 miles less than 1 per cent of the time.

11. **Cook Islands and lles Tubuai.—**Precipitation over these islands is plentiful with October through March the wettest period. Annual amounts range from about 1,900 to 3,050mm on about 150 to 200 days.

Thunderstorms usually occur on about 15 to 30 days annually and are most likely in summer.

Skies are, on the average, cloudier S of about 15˚S. Cloudy skies coincide with the rainy season and are present about 20 to 30 per cent of the time, while clear skies are observed at the same frequency from about April through November.

Temperatures in the northern Cook Islands show little seasonal variation while those in the S and in the lIes Tubuai show a variation of about 3˚ to 5˚C. In the N mean daily maximums range from the upper 20s to low 30s (˚C), with minimums in the low to mid 20s (˚C). In the S, daytime highs range from the upper 20s (˚C) in summer to the low to mid 20s (˚C) in winter, while nighttime lows dip into the low 20s (˚C) in summer and the upper teens (˚C) in winter. Extreme high temperatures remain below 38˚C everywhere, while extreme minimums drop to around 21˚C in the N down to the upper single digits to low teens (˚C) S of 15˚S.

Relative humidities are less prone to seasonal and latitudinal variations and more susceptible to diurnal changes. Nighttime readings are in the mid to upper 80 per cent range. They fall during the morning hours, reaching a low in the early afternoon in the low to mid 70 per cent range.

Visibilities are usually good at sea, dropping below 2 miles 1 per cent or less of the time. On lIes Tubuai, haze is observed occasionally, but is unlikely in winter. Sometimes local fog exists when the weather is clear a few miles to sea.

12. **Line Islands and the Marquesas Islands.—**Annual precipitation amounts range from 500 to 3,800mm on the average. The larger values are found N of Christmas Island and S of MaIden. The relatively dry zone usually ranges from just N of the Equator to about 5˚F. There seems to be no definite rainy period although Fanning Island, Christmas Island, and MaIden Island usually have an April peak.

Rain falls on about 90 to more than 250 days annually. Thunderstorms are infrequent.

There is little difference in cloud amounts N and S of the Equator. At sea, cloudy conditions are observed 10 per cent or less of the time, while clear skies occur 30 to 60 per cent of the time, with a slight winter and spring peak in the N.

Temperatures vary only a few degrees seasonally or latitudinally. Daytime highs average in the upper 20s to low 30s (˚C), while lows drop into the low 20s (˚C). Extremes range from about 38˚C to 15.6˚C.

Relative humidities vary from the 80 per cent range at night to the 60 per cent range during the day. September through November is often the driest period.

Visibility is good throughout the area, with showers accounting for most of the restrictions.

13. **Society Islands, Tuamotu Archipelago, lIes Gambier, Pitcairn Island, Ducie Island, and Henderson Island.—**In an average year rainfall amounts range 1,500mm to more than 2,500mm in this region. At sea, precipitation is observed 7 to 12 per cent of the time near Pitcairn Island and 2 to 7 per cent of the time elsewhere. The rainy season runs from about November through May N of 20˚S and spreads out through most of the year to the S.

Thunderstorms are infrequent, being recorded on 8 to 20 days annually; they are most likely from January through July.

Except in the SE portion, where there is little seasonal variation clouds, are more likely during the rainy season (November-May). At sea, cloudy conditions are observed about 10 to 18 per cent of the time during this season. Near Pitcairn a peak of 20 to 23 per cent of the time occurs in spring. Clear skies are encountered 20 to 35 per cent of the time in the N and 15 to 30 per cent of the time near Pitcairn.

Temperatures vary little N of lIes Gambier. Mean daily maximums range from the upper 20s to low 30s (˚C) with minimums in the low 20s (˚C). To the S, the warmest readings occur from December through March, when daytime highs usually reach the upper 20s to low 30s (˚C) and nighttime lows dip into the low to mid 20s. (˚C) During July and August, mean daily maximums reach the low to mid 20s (˚C), with minimums in the upper teens (˚C). Extremes range from the mid 30s to the low teens (˚C) in the S and around 15˚C N of 20˚S.

Relative humidities are fairly constant throughout the year with more of a diurnal variation. During the night readings

climb into the 80 per cent range. During the morning hours they begin to fall reaching a minimum in the upper 60 to mid 70 per cent range by early afternoon.

The main restrictions to visibilities are showers. At sea, visibilities drop below 2 miles about 2 to 3 per cent of the time in summer around the Tuamotu Archipelago, but less than 1 per cent elsewhere year round.

WEST COAST OF SOUTH AMERICA

General.—Climates along the W coast of South America range from the hot humid tropical rainforest of the Panama Gulf region through the cool tropical desert region of Peru and northern Chile and the transitional moderate climate of central Chile to the damp cool climate of the S. The boundaries are not sharp, but are ones where one climatic zone gradually merges into that of another.

The controlling climatic features are the South Pacific subtropical high flanked on the N by the Intertropical Convergence Zone (ITCZ) and on S by migratory circumpolar low pressure systems. The coastal climate is also influenced by the markedly different warm Equatorial Current and the cold Peru or Humboldt Current.

The equatorial low and ITCZ range between 12˚ to 14˚N in winter (August) and 0 to 2˚N in summer (February). Rainfall along the Panama-Colombia coast reflects this movement as peaks occur when the ITCZ is near. Rainfall rather than temperatures, which are high year round, determine the seasons.

From Ecuador to northern Chile, the coast is blanketed by a subsiding S flow of cool dry air emanating from the South Pacific high. Originally warm and dry, the air is exposed to the cool Peru or Humboldt current and becomes even more stable, with an almost total lack of precipitation. This results in the barren wastes that make up the Atacama Desert, which is similar to Baja California and northwest Mexico.

Along the N coast of Ecuador, the Equatorial Current brings some relief from the dryness during the summer (December-April). Trade winds blowing across this current bring warm humid air, rainfall, and clouds. The S invasion of this warm water is known locally as El Nino (The Child) because of its advent near Christmas. In some years, the current spreads a thin layer of warm surface water farther S along the coast of Peru. This usually dissipates quickly, but in abnormal years the cold water of the Peru Current is replaced by a rather deep layer of warm water, with surface temperatures near 27˚C. The air above becomes warm and moist, giving rise to banks of towering cumulus and torrential rains along the coast as far S as 14˚S. Sometimes more than ten times as much rain will fall in a few days as would normally fall all year or in several years. An exceptionally strong El Nino has an average return period of 20 to 25 years near Lima, compared to 6 or 7 years on the N coast of Peru. The duration of El Nino ranges from 1 week or more in the S to 2 months or more in the N.

To the S of the South Pacific high, air moves E over a large expanse of ocean, becoming cool and moist. This becomes the mainstream of the mid-latitude westerlies which, along with the migratory low pressure systems, completely dominate the S one-third of Chile. This coast has a climate characteristic of the northwest United States and British Colombia. The central coast of Chile is a battleground between the dry weather to the N and the wet weather of the S. During winter, when the subtropical high is farthest N (about 25˚S), W winds prevail while summer (January) brings the dry subsiding S flow. The weather conditions are “Mediterranean” and similar to California, with warm dry summers and wet mild winters.

Intertropical Convergence Zone (ITCZ).—This area of frequently disturbed weather moves N and S with the sun. It reaches its northernmost position, about 12˚ to l4˚N, in February and lies between the Equator and 2˚N in August. It oscillates from day to day from its mean position and can vary a couple of hundred miles in a few days. The ITCZ, an important source of rainfall, is discontinuous as well as variable. Disturbed weather areas may vary in width from less than 50 miles to several hundred miles. Rain is usually showery in nature and thunderstorms can occur. During less vigorous periods, the ITCZ may degenerate into an area of broken cumulus clouds and scattered showers; sometimes it becomes so weak that little or no cloudiness can be found.

Camanchaca.—The air flowing over the upwelled waters of the Peru Current is humidified and cooled until it reaches its dew point. Fog and low stratus clouds form. Known as “camanchaca,” this fog and low stratus is often hundreds of meters thick and frequently persists over water during all hours of the day. Onshore winds, generally the sea breeze, carries this fog to the coast over northern and central Chile. The camanchaca may occur in all seasons, but it is most frequent from May through October. It may last for weeks at a time during the latter half of this period. Dense fog or drizzle from the low stratus supply most of the meager amounts of moisture to the northern coast.

Roaring Forties.—Temperature differences between the subtropical oceans and the Antarctic continent cause a strong pressure gradient between about 35˚S and 60˚S, which induces a belt of strong prevailing westerlies known to mariners as the “roaring forties” and the “whistling fifties.” Southern South America juts into this stream, creating the only major interruption to its flow around the Southern Hemisphere. Mean wind speeds are near 20 knots year round. Gales are frequent and 80-knot winds have been recorded at a few island locations. Large migratory low pressure systems often ride these westerlies and their associated fronts trail N, often bringing poor weather to the central and S coasts of Chile. Some rain may even extend to the S fringes of the Atacama Desert.

Winds.—Offshore, S of 40˚S in summer and 35˚S in winter, lie the variable westerlies of the mid-latitudes. Moderate and frequently strong SW through NW winds prevail. Gales (wind of 34 knots or more) are encountered 15 to 25 per cent of the time S of 50˚S, with a peak from fall through spring. Some of the island locations report winds of 28 knots or more on more than 100 days annually. Mean speeds 15 to 20 knots are common S of 40˚S.

North of this region to just S of the Equator, winds tend to follow the coastline, which results in a preponderance of SE, S and SW winds. Gales become increasing less likely; N of 20˚S they blow less than 1 per cent of the time year round. Wind speeds average 5 to 10 knots. In the Gulf of Panama, winds vary with the season and the shifting of the ITCZ.

There is a seasonal battle between the trade winds from the two hemispheres. From about December through April, N and NE winds are in control. Wind speeds average 8 to 12 knots and gales are rare. After a short transition period, SW and W gain control in June and persist until November. Wind speeds average 7 to 10 knots and, again, gales are rare.

Coastal winds are subject to the land-sea breeze effect, topography, and other local influences. This is particularly true in the tropics, where pressure gradients are often weak. From May through September N of the Equator and from January through April to the S, early morning winds are often light or calm.

By late morning, a sea breeze picks up, increasing in intensity until reaching full strength by early afternoon. These breezes commonly reach 10 to 20 knots and occasionally, when they reinforce the prevailing flow, speeds may approach gale force. The sea breezes are frequently out of the S through NW depending upon location. Shortly after sunset, the wind abates.

During the night, winds are often calm or a light land breeze may develop. This effect extends along the entire coast when pressure gradients are weak. It is most noticeable from central Chile Nd in summer. These sea breezes and the prevailing flow combine to bring a preponderance of S through NW winds year round to the coasts of Colombia, Ecuador, and Peru. The Panama coast has sea winds from May through November. For the rest of the year, NW through N winds are common. Strong winds along these equatorial coasts are most often associated with thunderstorm gusts. Occasionally they approach hurricane force (64 knots or more); Buenaventura, Colombia has recorded a 45-knot sustained wind.

Land and sea breezes affect the N and central coast of Chile. Sea breezes are a factor year round, while land breezes are prominent in winter, usually between midnight and sunrise; they seldom reach more than a moderate speed. To the S the coast is exposed to strong W winds, which are interrupted by migratory cyclones with their associated fronts. Winds become variable, with frequent frontal approaches and passages. Winds shift from a N component to a S component, then to a W component. Wind speeds increase. Winds greater than 20 knots are common, while gales occasionally blow, particularly at the more exposed locations. In the southernmost sections there is little seasonal difference in the frequency of high winds, while a winter maximum can be expected near central Chile. Along this coast winds out of the SW through N are common.

Precipitation.—Rainfall near the Panama Canal averages about 1,770mm annually on about 150 to 170 days. May through November is generally the rainy period. Thunderstorms occur on 40 to 80 days annually, mostly during the rainy period, particularly June through October. The driest period is February and March, when monthly amounts usually average less than 25mm. Along the coast of Colombia and northern Ecuador, annual rainfall amounts range from about 2,540mm to nearly 7,600mm inches falling on 200 to 300 days. Precipitation shows some seasonal variation, with a slight lull during February and March in the N and from August through November in the S.

Thunderstorms become increasingly less frequent towards the S; Buenaventura records 27 thunderstorm days annually, while Esmeraldas records 1 day. Maximum 24-hour amounts along the section of the coast from the Panama Canal to northern Ecuador range from 125 to 250mm. Rainfall on this coast is mainly dependent upon the ITCZ.

Near the Gulf of Guayaquil, annual amounts fall to 250mm or less, dropping to less than 125mm along the coast of Peru and northern Chile. Many locations record less than 50mm annually, some receiving less than 25mm. There are some places on the Atacama Desert that have received a total of less than 25mm in 50 years. This sparse rain falls on 10 to 20 days each year. This is due to in part the stabilizing effect of the Peru Current.

From Lima S, the summer half of the year receives the least precipitation. During the winter, persistent low stratus is sometimes accompanied by a very light drizzle known locally as “garua.” This is the principal form of precipitation along the coast. In areas where 250 to 500mm is normal, an abnormal year can produce 1,000 to 1,500mm, like when the El Nino becomes established. Heavy amounts are most likely during February, March, and April. This variation is usually confined to Ecuador and northern Peru. Thunderstorms are unusual.

Along the central coast of Chile rainfall amounts begin to increase uniformly from about 250mm to 2,500mm. Along the S coast of Chile, precipitation amounts vary with exposure between 2,500mm and 7,500mm and rain falls on over 300 days in some sections.

There is in general a lack of seasonality in the S while in the central region, from Valparaiso to Puerto Montt, summer is the driest period, when monthly amounts are often less than 50mm, which falls on less than 5 days; May through August are the wettest months. Averages vary from less than 125mm to more than 375mm on 8 to 20 days per month.

In the southernmost part of Chile snow falls on about 2 to 10 days per month from May through October, but is temporary at lower elevations. Maximum 24-hour precipitation amounts range from less than15mm along the northern coast of Chile to near 325mm in the S.

Thunderstorms occur on less than 10 days annually, with a slight winter maximum.

Cloud Cover.—In general, cloudiness has seasonal patterns similar to rainfall. In the tropics, a diurnal variation is often noticeable as well. Clouds increase during the afternoon and early evening, due to convective activity, and decrease late at night.

Near the Panama Canal, skies are cloudy on 20 to 30 days per month from May through November, while clear skies are observed on 8 to 16 days per month during January, February, and March.

Colombia and northern Ecuador are a lot cloudier, with little seasonal fluctuation. Cloudy days occur, on average, 20 to 27 days per month year round, with only 20 to 30 clear days all year.

Around the Gulf of Guayaquil during the dry period, May through September, a dense cover of low stratus often drifts ashore and maintains an overcast day and night. This flow across the Peru Current results in a winter and spring maximum along the central and S coasts of Peru; the central coast experiences a minimum in autumn. Cloudy skies occur on 100 to 200 days annually.

Chile experiences a wide variety of sky conditions from the nearly cloudless skies of the N desert to the almost endless cloudiness of the S tip. Along the N coast, early morning clouds are observed mostly from July through October; cloudy skies occur on about 120 to 150 days annually. Clear skies are most likely in summer when they are likely on 10 to 15 days per month. Along the central coast, May through October are the cloudiest months accounting for much of the 120 to 190 days of cloudy skies each year, on the average. Clear skies are common from October through March. However, S of Valdivia (40˚S), clear days are few. Skies are cloudy on about 200 to

300 days annually. Near 40˚S, mid-summer is about the least cloudy time.

Temperature.—In the tropics temperatures change more between day and night than they do seasonally or even latitudinally. Cloud cover is a moderating factor under the hot tropic sun. Lowest afternoon temperatures often occur during the rainy season while coolest nighttime lows are most likely during the clear dry season. From the Equator N, temperatures at coastal locations reach the upper 20s to low 30s (˚C) during the day, with nighttime lows in the low to mid 20s (˚C). March and April are usually the warmest months, when about 15 to 25 days per month see the temperature climb to 32˚C or above. However, extremes never reach 38˚C at exposed locations. Extreme lows are usually in the upper teens (˚C) and are just as likely in the S summer season as at any other time.

Galapogos Islands.—This region, some 600 miles W of Ecuador, is subjected all year to the stabilizing influences of the South Pacific Trade Winds and the cold Peru Current. Skies are usually partly cloudy, with stratus more common than cumulus. Low ceilings and moderate rainfall occur only on the windward slopes. Rain is spotty on the flat sections and leeward slopes, causing semiarid conditions. The high relative humidity is alleviated by the steady winds and moderated temperatures. Thunderstorms are rare, but fog and haze are common.

NORTH PACIFIC OCEAN

General Climate

Summer.—Summer over the North Pacific is relatively calm but is interrupted occasionally by the violence of tropical cyclones. A large semi-permanent quasi-stationary high dominates almost the entire North Pacific on the mean pressure charts. Some 1,200 miles north of Hawaii, its average central pressure builds to more than 1025 mb.

Extratropical storms, so abundant in other seasons, decrease in number and intensity. They are confined to mainly N of 40˚N. Their mean tracks are similar to those of other seasons. They run from the China mainland, and from waters around Japan, NE to the Aleutian Islands, where they either move into the Bering Sea or the Gulf of Alaska. Some start in the central North Pacific Ocean and extend NE into the Gulf of Alaska.

North of 40˚N overcast conditions (sky cover greater than or equal to 8/10) prevail about 60 to 80 per cent of the time as warm moist air is cooled by the sea surface. Clear skies are uncommon. These same phenomena are responsible for the prevalent foggy conditions over the N great circle routes at this time of the year. Visibilities less than 1 mile are observed 10 to 40 per cent of the time in general, and up to 60 per cent of the time near the Kuril Islands.

Precipitation frequencies drop off slightly over these N latitudes. Precipitation is observed about 10 to 20 per cent of the time N of 30˚N. South of this latitude frequencies fall below 10 per cent.

Summer winds are light and variable N of a line from the Philippines to Vancouver Island. They blow most often from the S semicircle; in the western North Pacific Ocean they are labeled the Southwest Monsoon. The Northeast Trade Winds prevail S of this line, where winds are generally NE through E. Summer gales are infrequent but can be experienced in the Intertropical Convergence Zone (ITCZ) and within the circulation of a tropical cyclone.

The ITCZ is a broad discontinuous fluctuating band of clouds, showers, and thunderstorms. It is responsible for most of the weather in the tropics and is often the birthplace of tropical cyclones. Winds are generally NE on the N side of the ITCZ and SW on the W side. Its position fluctuates seasonally to a large degree and daily to a lesser degree. Its seasonal path follows the sun.

The ITCZ reaches its northernmost position in early summer. It extends discontinuously from the Philippines to Panama, fluctuating between the Equator and 10˚N, except over parts of the eastern North Pacific, where it bulges N to about 15˚N. The ITCZ is responsible for overcast conditions that prevail 20 to 40 per cent of the time in the tropics. Clear days are observed from 10 to 20 per cent of the time, reflecting the discontinuity of the ITCZ.

Coincident with the N push of the ITCZ is the start of the tropical cyclone season in both the western and eastern North Pacific Ocean by Mayor June. The western North Pacific Ocean season runs through December while the eastern North Pacific Ocean season usually terminates in October. Although these tropical cyclones fall into similar categories, their characteristics are dissimilar.

The western North Pacific has an annual average of 30 tropical cyclones (tropical storms and typhoons), of which approximately 20 reach typhoon strength. North Pacific Ocean typhoons are the largest tropical cyclones in the world. Diameters of 500 miles are common. Maximum wind speeds often reach 130 knots or more; about 15 per cent of all tropical cyclones achieve this supertyphoon category.

The eastern North Pacific Ocean spawns an annual average of about 15 tropical cyclones (tropical storms and hurricanes), of which about five become hurricanes. These storms are small and tightly organized; diameters of less than 100 miles are common. Maximum sustained winds speeds rarely reach 130 knots. This may be due in part to lack of observations near the center of such small storms.

In both regions, tropical cyclones form between 5˚ and 20˚N, move initially in a W direction, then either continue on this path or curve to the NW through NE. Eastern North Pacific Ocean tropical cyclones are in general much shorter lived than western North Pacific Ocean storms. Occasionally, a North Pacific Ocean tropical cyclone will cross the date line from either side, so the delineation between regions is not always clear cut. The rare tropical cyclones that affect the Hawaiian Islands form in the eastern North Pacific Ocean.

Tropical cyclones, upon reaching N latitudes, often become extratropical and continue across the ocean in this manner. These former tropical cyclones can be dangerous.

During the summer, western North Pacific Ocean tropical cyclones develop between the Marshall Islands and the Philippines. This area expands latitudinally until, by August, a substantial percentage of storms form N of 20˚N and on rare occasions close to 30˚N. The heart of this broad area of formation is just W of Saipan in the Mariana Islands. Tropical storms most often reach typhoon stage between the Mariana Islands and northern Philippines, but this can occur anywhere from Wake Island to the Vietnamese coast and from 5˚ to 35˚N.

In the eastern North Pacific Ocean, the area of tropical cyclone formation spreads out longitudinally during the summer. In June, these storms are usually first detected between 90˚W and 110˚W, by August, the W boundary is the Hawaiian Is-

lands. These tropical cyclones usually form between 10˚N and 25˚N during the summer. Hurricanes most often recurve E of 120˚W in June. As the summer progresses, they gradually move farther W before recurring. By September, the W limit of recurvature is about 170˚W.

Autumn.—The transitional nature of this season is apparent in the monthly sea level pressure charts. From September through November, the Aleutian Low gradually strengthens and expands while the North Pacific High weakens and shrinks. North of 30˚N, extratropical storms become more frequent and more intense. In the tropics, eastern North Pacific Ocean typhoons are still frequent and can affect shipping as far N as 45˚N. Eastern North Pacific Ocean hurricanes continue to plague the waters west of the Mexican coast but their frequency drops sharply by November.

Western North Pacific Ocean tropical cyclones form below 20˚N in September and then below I5˚N by November. The average latitude of recurvature, which was 28˚N in August, drops to 20˚N by November. Tropical storms often reach typhoon intensity between the Mariana Islands and the northern Philippines. In the eastern North Pacific Ocean, the area of formation shrinks from its August spread and seems to be restricted to E of 125˚W and between 10˚N and 20˚N. By the end of September, these storms tend to hug the Mexican coastline and a large percentage move inland.

The ITCZ is around 10˚N across the entire Pacific Ocean in October. By November, it has slipped a few more degrees S to the E of 180˚ and below the Equator W of 180˚.

Clear skies, good visibilities, and light winds are the rule between 20˚N and 35˚N. South of 20˚N, overcast conditions are observed 20 to 40 per cent of the time; precipitation remains light and visibility good.

Extratropical storms from over the Asian Continent and in the waters around Japan, often from the remnants of tropical cyclones. These storms move toward the Aleutian Islands and into the Bering Sea or the Gulf of Alaska. Storms also develop in the central North Pacific Ocean and move into the Gulf of Alaska. During most of the cool season (late fall, winter, and early spring), the Gulf of Alaska has the highest frequency of extratropical cyclones in the Northern Hemisphere.

The increase in number and intensity of extratropical storms is reflected in the gale frequencies over the N great circle routes; there is an increase from the summer lull to 10 to 20 per cent N of 40˚N. Wind directions in this region are variable but show a slight preference for the W semicircle NW quadrant S of the Aleutian Islands and the SW quadrant in the Gulf of Alaska. Overcast conditions (sky cover greater than or equal to 8/10) prevail 60 to greater than 70 per cent of the time N of 40˚N, while clear days (sky cover less than or equal to 2/ 10) are observed less than 20 per cent of the time.

Visibilities in these N latitudes improve dramatically from summer. Visibilities less than or equal to 1 mile occur 5 to 10 per cent of the time. while visibilities less than or equal to 5 miles occur 10 to greater than 20 per cent of the time.

South of 30˚N, NE winds continue to prevail. These are known as the Northeast Trade Winds over most of the Pacific, Ocean and as the Northeast Monsoon W of about 150˚E. These winds persist from 70 to 90 per cent of the time.

Winter.—In winter, the Aleutian Low looms over the North Pacific Ocean as a climatic warning to mariners navigating the N great circle routes. The extent, position, and central pressure of this semi-permanent climatic system reflects many features of the everyday weather patterns. This low, centered in Bristol Bay during the fall, progresses SW, centering itself near the Rat Islands by December. Its mean central pressure remains below 1000 mb from December through February, the season of storms for the northern North Pacific Ocean. Its broad expanse covers the Pacific Basin from the Arctic Ocean to 30˚N and from the North American coast to Japan. The southeastern North Pacific Ocean, between the Hawaiian Islands and Baja California, is covered by a remnant of the summer-dominant Pacific High while the Sea of Japan and the East China Sea are under the influence of a seaward bulge of the Siberian Anticyclone.

Winter storms from the China mainland and the waters around Japan move NE toward the center of the Aleutian Low, then into the Bering Sea or the Gulf of Alaska. Storms from the central North Pacific also tend to move into the Gulf of Alaska, making these waters the most active in the Northern Hemisphere. And with this activity comes the rain, sleet and snow, the howling gales, and the poor visibilities which characterize the weather along the N great circle routes during this season. Gales can be expected 20 to 30 per cent of the time N of a line from southern Japan to Vancouver Island. They frequently ride winds from the NW quadrant W of the date line and winds from the SE quadrant E of the date line. The more potent Pacific Ocean storms carry gales in both and sometimes all quadrants. Any ship sailing a route N of 40˚N is likely to encounter gales in winter.

In addition to the wind along these Ny tracks, overcast conditions (sky cover greater than or equal to 8/10) prevail 50 to 70 per cent of the time, precipitation occurs 25 to 45 per cent of the time (50 to 95 per cent of this occurs in a frozen form), and visibilities less than or equal to 5 miles are encountered up to 20 per cent of the time. In isolated areas along the Kuril Islands, in the Sea of Okhotsk, and in the Bering Sea, these poor visibility frequencies are as high as 40 per cent. Visibilities less than 1 mile are found 5 to 15 per cent of the time along the North American coast between Vancouver Island and Southern California, and in the Gulf of Alaska, and 10 to 20 per cent of the time in the Bering Sea and the Sea of Okhotsk.

Over the western North Pacific Ocean, the Northwest Monsoon (winter) is the controlling feature. This monsoon originates in the intense Siberian High. It is a remarkably persistent flow W of 160˚E; it strengthens and fades in a series of surges and lulls covering periods that last from 10 to 12 days. Over open waters, N to NW winds average 17 to 22 knots during the winter. January is the heart of the winter monsoon season; S of 50˚N winds from the NW quadrant prevail 70 to 75 per cent of the time. South of 35˚N over most of the Pacific Ocean and S of 30˚N in the waters around Japan, the transition zone from the N latitudes of storms to the Northeast Trade Wind regime begins. This moderating zone extends S to about 25˚N. It is characterized by light and variable winds, partly cloudy skies, good visibilities, mild temperatures, and little precipitation. These mild conditions are occasionally interrupted by an errant extratropical storm caught in a E flow or in the eastern North Pacific Ocean by the occasional N displacement of the ITCZ.

During the winter, the ITCZ lies between the Equator and 10˚N to the E of the date line and moves into the Southern Hemisphere to the W of the date line. The ITCZ is responsible

for showers and thunderstorms, and for the overcast conditions which occur up to 40 per cent of the time over the eastern North Pacific Ocean tropics in winter. Winds are generally NE on the N side of the ITCZ and SW on the S side. Gales that infrequently occur are the result of squalls within this band. They reach typhoon strength about 60 per cent of the time. On the average, two tropical cyclones can be expected each winter in the western North Pacific Ocean.

Spring.—The monthly sea level pressure chart for spring looks like a battle for control of the Pacific Ocean Basin between the advancing Summer High and the retreating Aleutian Low. The Summer High covers the North Pacific Ocean S of about 42˚N (latitude of northern Honshu) while the Aleutian Low covers the remainder.

Storms still move off the Asian mainland, and from the waters around Japan, toward the western Aleutian Islands, and then either into the Bering Sea or the Gulf of Alaska. Central North Pacific Ocean storms still tend to move NE into the Gulf of Alaska. However, there is a noticeable difference from the violent winter storms that plied these same waters. While the number of storms decreases only slightly, there is a significant reduction in the storms' intensities. This can be seen in the higher central pressure of the Aleutian Low (1002.5 mb) and also in the frequency of gales over the N great circle routes. In areas where winter gales were occurring up to 20 per cent of the time, they are not occurring about 10 per cent of the time. South of a line from Taiwan to Vancouver Island, gales are rare. Gales occur most often in the NW and SW quadrants of extratropical storms.

A general decline in wind speed and an increase in variability sets in over the Pacific Ocean in March as the winter monsoon and the winter pressure systems begin to weaken. This change accelerates during April and May. By May, over the Sea of Japan and Yellow Sea, S winds have replaced the prevailing winter flow. Elsewhere, N of 30˚N, S winds have become more pronounced. South of 30˚N and E of 160˚E, the Northeast Trade Winds prevail. West of 160˚E, these trade winds are more E.

Spring brings even more cloudiness than winter. In the northern North Pacific Ocean, the large number of lows and the warm springtime air blowing over still cold waters cause overcast conditions (sky cover greater than or equal to 8/10) 60 to 80 per cent of the time. Locally around the Aleutian Islands, these bleak conditions occur greater than 80 per cent of the time. Visibilities, on the average, are the same as they are in winter. Visibilities less than 5 miles occur up to 20 per cent of the time Visibilities less than 1 mile occur up to 5 per cent of the time, over the N great circle routes; the latter increases to greater than 10 per cent on both sides of the Kuril Islands. Precipitation frequencies, in general, decrease during the spring over the N routes, with 25 to 40 per cent frequencies dropping to 20 per cent by spring's end. By May, frozen precipitation occurs less than 5 per cent of the time in the waters N of 35˚N.

Cloudiness in the tropics does not differ much from winter conditions. The ITCZ now fluctuates between the Equator and 12˚N, from Colombia, South America to about the longitude of the Hawaiian Islands (160˚W), and then between the Equator and 10˚S over to the longitude of eastern New Guinea (145˚E, where it recrosses the Equator and extends NW into the South China Sea. The influence of this discontinuous zone is reflected in the cloud cover of the tropics. Overcast conditions and clear skies are encountered 20 to 30 per cent of the time. Rainfall, which does not vary much over tropical ocean areas, is generally encountered less than 10 per cent of the time in the spring. Most of these rainfall encounters are with showers in the ITCZ, within the circulation of an occasional tropical cyclone in the western North Pacific, or a rare one in the eastern North Pacific Ocean. Any rare gales in the tropics are also associated with tropical cyclones and the ITCZ.

Two to three tropical cyclones can be expected in any given spring in the western North Pacific Ocean; either one or two should reach typhoon strength. These storms would most likely be encountered between 10 and 20˚N. They usually form somewhere E of the Philippines, move E either through the Philippines into the South China Sea or recurve toward the NE, and dissipate or become extratropical over the colder waters at higher latitudes. May is the most likely spring month for a typhoon, just as it is for an eastern North Pacific Ocean hurricane. Spring tropical cyclones have only been observed in E waters during May, but could form earlier. These rare May storms form close to the Mexican coast and usually exist for just 3 to 4 days. However, they can reach hurricane strength very rapidly.

Northeastern North Pacific Ocean (including the Gulf of Alaska and British Columbia)

Extratropical Cyclones.—In winter, all of the many extratropical cyclones that reach the Gulf of Alaska and the British Columbia coast generally originate in the western or central Pacific Ocean. These storms are the principal source of bad weather and a single storm may affect this area for days before dissipating or moving inland. Often they come in a series of interconnected families of four or five and may affect weather conditions for two weeks or longer. These storms generally move at a rate of 20 to 25 knots in an easterly or northeasterly direction.

In general, two groups of storms are easily recognized. Those in the S group develop rapidly into closed circulations and move NE towards British Columbia. Off the coast some slow down and fill, others alter course and follow the coast NW, while some continue E, passing over British Columbia. The N is comprised of those storms which form far to the W near Kamchatka or Japan. Some of these cyclones move NE through the Bering Sea into the Arctic, and some travel E through the Gulf of Alaska. On approaching the mainland, some become stationary and die out, while others swing SE along the British Columbia coast.

In the summer, cyclonic activity is very much reduced although some activity continues in the northern Gulf of Alaska. Cyclones approaching the British Columbia coast during these months are not able to penetrate the anticyclone and usually remain W of 170˚W. Summer conditions usually last until the middle of September and change abruptly near the end of that month to the winter type.

Winds.—North of 40˚N, late fall and winter winds are W to SW in the central Gulf of Alaska, changing to S near British Columbia and E off the Alaska coast. In spring, SW to W winds over the open ocean become SE to SW in the Gulf of Alaska. Over the Gulf of Alaska in summer, SW winds change to NW in the S. In early fall, areas N of 45˚N experience W to SW winds that become SE near the coast. South of 45˚N, winds are W to NW.

Average winds speeds are highest in late fall and early winter. North of 45˚N, in the open Gulf of Alaska, average wind speeds range from 20 to 25 knots, while closer to the British Columbia coast averages drop to 15 to 20 knots, decreasing S. In the spring, mean winds speeds range from 13 to 17 knots near the coast to about 20 knots over open waters. Summer winds are weakest, with averages of 10 to 15 knots over the entire area. In the fall, winds begin to increase again and over the open Gulf of Alaska, they range from 18 knots in the N to 22 knots in the S and 10 to 15 knots along the British Columbia coast.

Gales.—Gales (winds greater than or equal to 34 knots) may be encountered in the Gulf of Alaska year round, although they are rare during the summer months. Locations most frequently affected by strong winds are those along the exposed coast or islands but funneling effects may intensify winds at more protected stations. As a general rule, intense Gulf of Alaska lows tend to create strong S or SE winds over the southern Gulf and along the British Columbia coast; gust of 60 knots or greater occur almost monthly during the winter season.

From a minimum of about 1 per cent or less in summer, the frequency of gales increases rapidly in the fall. By October, gales are experienced about 8 to 10 per cent of the time in the northern Gulf of Alaska and up to 18 per cent of the time in the S. Closer to the British Columbia coast, these frequencies are just 3 to 5 per cent. Gale frequencies remain high through March. They reach a peak in December, when frequencies over open waters range from 17 to 26 per cent N to S. This range is 5 to 10 per cent off the British Columbia coast. By April, gale frequencies along the coast have dropped to below 5 per cent and to below 12 per cent over the open waters of the Gulf of Alaska.

Local Winds.—The inland waters of British Columbia are a labyrinth of deep inlets bordered by high cliffs and steep mountainous slopes. The direction and strength of the wind is influenced by this type of topography. Winds funneled through these inlets tend to blow along the axis of the strait. The two main local winds are, as follows:

1. **Squamishes.—**This wind is named after a settlement at the head of Howe Sound. It occurs during the winter months when the continental anticyclone is well established. Squamishes are strong, often violent, winds which bluster down the fjords, bringing cold polar air from the continent to the coast. They lose their strength when free of the confining fiords and are not noticeable 15 to 20 miles offshore.

   Offshore winds tend to be frequent in winter on coasts in middle and high latitudes, especially if highlands back the coast. Squamishes are merely local topographical intensifications of these winds. Their strength makes them a source of damage on land and a danger to navigation at sea. Squamishes are well known in many of the fjords of British Columbia. They occur in those fjords oriented in a NE-SW or E-W direction, where the cold polar air can be funneled W. They are notable in Jervis Inlet, Toba Inlet, and Bute Inlet, and in Dean Channel and Portland Canal. One squamish blew at Green Island Light, 8 miles SW of Portland Canal entrance, from December 27 until January 3 and was less than a fresh gale on only one day.

2. **Williwaw.—**The williwaw is a violent squall with strong gusty winds that is encountered in the N inlets of British Columbia and in particular off the W coast of Queen Charlotte Islands. Williwaws, unlike the squamish, are usually of short duration. They are encountered during the winter and are caused by the drainage of cold air which sweeps down the mountain slopes with great force in these narrow inlets. When piloting close to the coast in stormy weather, williwaws may be encountered near the mouth of these inlets. Vessels at anchor should be cautious. Williwaws come up suddenly and the successive strong gusts of wind from varying directions may cause the vessel to yaw badly, with the possibility of dragging anchor.

Land and Sea Breezes.—Land and sea breezes are prominent in the fine settled weather of the summer. The sea breeze sets in on the coast about 1000, strengthens until the afternoon, and dies away before sunset. At its strongest it usually reaches a gentle to moderate breeze. The land breeze is much lighter, from a light to gentle breeze. Under favorable situations, both can be much stronger. The sea breeze may occasionally rise to a strong breeze and persist far into the evening.

Coastal Winds.—Along the coast, winds from the SE, except for the warmer months, predominate. In winter, SE winds far exceed all other directions in frequency. However, in summer, winds between N and E increase and in some locations are encountered more frequently than SE winds. Some of the coastal stations at protected locations report a high frequency of calms.

At Prince Rupert, between October and April, SE winds are encountered about 40 per cent of the time. In the warmer months, this frequency drops to about 25 per cent. This change in frequency is reflected by an increase of calms to about 30 per cent in the early morning hours and an increase of the NW winds to about 25 per cent in the afternoon. Between October and March, the average number of days with gales is 2 or 3. Gales are rarely encountered during the warmer months.

At Masset, SE winds also predominate from October to April, but they are not as persistent as those at Prince Rupert, occurring on only about 30 per cent of the observations. North and NE winds are fairly common during this period. From May to September, winds from the W and NW are reported about 50 per cent of the time, with SE winds now averaging about 25 per cent. The mean number of days per month with gales averages about one, from October to March. Gales are rarely encountered in the summer months. Calms are very infrequent at Masset compared to their high frequency at Prince Rupert.

In the Strait of Juan de Fuca, the winds often blow in or out, following coastal contours, blowing in with the prevailing SW to NW winds but blowing seaward during the SE gales of winter. When the seas raised by these outflowing winds from the strait meet the SW swell at the entrance, heavy cross seas are the result.

The prevailing wind in the Strait of Georgia is from the NW in the summer. From May to September, it blows with considerable strength and steadiness as far as Point Roberts, commencing about 0900 and dying down toward sunset. During the cooler months, strong NW winds often follow the passage of an intense cold front. These winds may obtain gale force, particularly in the S part of the Strait of Georgia where they are funneled between mountain ranges rising steeply to several thousand feet on both sides. Often they are intensified by offshore winds blowing down the inlets of the mainland. These strong winds have caused considerable damage ashore and to small craft.

In the San Juan Archipelago, the winds become variable. The W winds in the Strait of Juan de Fuca are deflected to the SW in the main channels of Rosario Strait and Haro Strait. Upon entering the Strait of Georgia, they often shift to the NW.

Precipitation.—Over open seas, precipitation occurs most frequently during the winter months. Off the British Columbia coast, precipitation frequency reaches a maximum of about 35 per cent in January. During this month snow occurs on about 5 per cent of the observations. During the summer months, the percentage frequency of observations reporting precipitation is at a minimum and varies between 15 and 20 per cent.

Along the coast, precipitation varies considerably due to the topography. On the windward or W side of Vancouver Island and the Queen Charlotte Islands, the average annual falls exceed 2,540mm. On the lee coasts, rainfall amounts are much smaller, averaging less than 1,275mm. On the mainland, precipitation again increases, reaching over 2,540mm at some of the higher locations.

At most of the stations, the rainy season extends from October to April, with November and December being the wettest months. Although the summer months are relatively dry, exposed locations receive over 100mm during July, one of the driest months.

Estevan Point, representing the more exposed stations on the W side of Vancouver Island, has an average annual rainfall of about 2,800mm. It ranges from a low monthly average of about 3 inches in August to about 420mm in December. The mean number of days reporting precipitation is 205 for the year. The monthly average is over 20 days between October and April. Langara, on the NW side of Graham Island, has an average annual rainfall of about 1,650mm. It ranges from a low monthly average of about 75mm in July to more than 225mm in October. The mean number of days reporting precipitation is 254 for the year, with a maximum of 26 days in October.

The SE shore of Vancouver Island, on the lee side of the mountains, is the driest region of this coast. Victoria, on the SE tip of Vancouver Island, has an average annual rainfall of only 685mm, ranging from a low monthly average of about 10mm in July to a high of 118mm in December. Although the totals are not too great, the mean number of days reporting precipitation is still high, averaging 147 days per year. During the winter months, an average of about 19 days per month report precipitation.

Those stations exposed to the full effect of the sea, record the fewest number of snowy days. Estevan Point has an annual average of about 5 days with snow. At Victoria, it increases to 9 days; at Vancouver it increases to 13 days, 5 days of which occur in January. Masset has an annual average of about 9 days with snow. At Prince Rupert, it increases to 22 days, 17 days of which occur from December through March. On the mainland, snow occasionally falls until May and may start as early as October. At the more exposed locations, it hardly ever falls outside the months of December through March.

Thunderstorms are very rare, occurring on the average, only once or twice a year.

Cloud Cover.—Cloudiness is high throughout the area with relatively little seasonal or diurnal variation. The amount of cloudiness varies very little throughout the year and the monthly averages usually range between 7/10 and 9/10. The minimum monthly average amount reported is 6/10.

Masset has an annual average coverage of 8/10 with none of the individual months falling below 7/10. In June and July, 81 per cent of the time the sky is overcast and about 10 per cent of the time, clear. March has the highest percentage of clear days, 22 per cent, however, 63 per cent of the observations during this month still report overcast skies. The sky is almost always overcast or practically clear.

During the winter, overcast weather clears rapidly after the passage of a cold front and there may be several days of cloudless skies associated with the high pressure system that follows the front.

Visibility.—Visibilities are poor in both winter and summer in the Gulf of Alaska. The winter maximum is a result of the heavy precipitation (including snows) which is experienced in the colder months. Surface visibility in the summer months is hindered mainly by fog.

Over the southern Gulf of Alaska and along the coast of British Columbia in winter months, visibilities less than 2 miles occur between 6 and 8 per cent of the time. In the spring, the frequency falls to 3 to 5 per cent. Peak summer months show visibility less than 2 miles occurring between 6 and 12 per cent of the time, and in fall the frequency drops to 2 to 6 per cent. In the Gulf of Alaska, visibilities less than 0.5 mile reach a peak of 5.3 per cent in July, decreasing to less than 1 per cent in April. Winter frequencies are about 2 per cent.

Conditions are most favorable for the formation of advection fog during the summer months. The relatively cool water temperatures off the British Columbia coast and the generally light anticyclonic winds associated with the stable North Pacific High are conducive to both the formation and maintenance of fog.

The seaward extent of fog varies greatly. The area of dense and most frequent fog occurs over the narrow stream of cold water just off the coast and is frequently limited to a band of 50 miles or less. At other times fog covers large areas and may extend hundreds of miles to sea. Fog may be spotty, reflecting the differences in sea temperature. When warm S winds bring in moist air, fog banks will appear where this air moves over stretches of cold water. This also occurs when prolonged strong NW winds produce upwelling off the coast. A change to S winds will then form extensive fog banks to seaward.

Fog banks are sometimes seen at the entrances to sounds or inlets in the early morning, but burn off rapidly as the temperature rises on clear days. At those stations fully exposed to the sea, advection or sea fog is most common between July and September. It reaches a maximum in August. At Langara, fog banks may frequently be seen offshore when there is no fog in the vicinity of the station.

Offshore near the Strait of Juan de Fuca, thick fog banks sometimes rear themselves almost perpendicularly, facing clear weather inshore, thus allowing vessels to arrive at their destination without difficulty. At other times, the bank will move slowly into the strait, enveloping both shores for some distance, then perhaps leave the Vancouver shore to the N and cling to the Washington shore. As a rule, the fog is more likely to follow into the strait along the S shore, reaching as far as Port Townsend. These fogs may remain over the entrance of the strait for days. Usually they are accompanied by calms or very light winds from the NW. During spring, fogs are also frequent in the strait; with a W wind, they often extend as far as

the headland between Crescent and Freshwater Bay while farther E the weather is clear.

In the N part of Queen Charlotte Strait, fog sweeping in from seaward usually breaks up after passing the islands at the mouth of the strait. This forms a line of fog between the Gordon group and the Millar group, leaving the area to the SE comparatively clear.

In the interior straits and sounds, fog is generally encountered in the fall, with October having the highest number of occurrences. The type of fog encountered during these months is generally radiation fog. During the late summer and fall, there are a great number of nights with clear skies and very little movement of air. During the night, as heat is lost from the earth by radiation, the air cools to its dew point, and fog results. In late summer, the nights are shorter and the opportunity for radiation cooling is not quite so great, therefore the fog is not so thick and dissipates rather early in the morning. As the nights lengthen during autumn, the fog will form earlier and to a greater depth and will not dissipate so early in the morning. In fact, under very stagnant conditions in October, it is not uncommon to have fog for several days. This condition may persist until a storm approaches the coast with sufficient wind to blowout the fog.

Smoke from forest fires may considerably reduce the visibility. The great expanse over which the smoke may spread and its persistence make it a real factor to be considered when navigating. These fires generally occur during the hot dry summers and reach a maximum in August and September.

In the vicinity of Vancouver, industrial smoke may seriously restrict visibility. After any night with calm or light winds, a dense pall of smoke can be seen over the city. It often moves away in the light land breeze down Durrard Inlet to the Strait of Georgia and at times across the strait to Vancouver Island. With an increase of the wind, the setting in of the sea breeze, or the approach of a storm with less stable air, the atmosphere clears, but haze frequently persists even in the afternoon. This condition is found most frequently in the summer with calm clear nights and in the winter with high humidity.

Temperature.—The winter temperatures are caused by a combination of the prevailing oceanic W winds and warm Pacific Current that fronts the coastline. The summers are hardly ever uncomfortable, because of the prevailing NW winds and the cool sea breezes. The coastal region is sheltered from the very cold polar outbreaks which originate in the interior by the coastal range which backs the coast. The few that do reach the coast have been considerably modified and their temperatures are much higher than those experienced E of the coastal range.

Triangle Island represents those localities fully exposed to the maritime climate. The small range in annual temperatures at such locations is readily seen. Triangle Island has an annual average temperature of 7.2˚C, ranging from 2.2˚C in January to 12.2˚C in August. In those months, the average daily maximum ranges from 3.9˚C to 14.4˚C while the average daily minimum ranges from 1.1˚C to 10.61˚C. The extreme temperatures recorded at Triangle Island were 25.6˚C in May and -17.8˚C in January.

Temperatures are more variable at those ports not fully exposed to the sea. Vancouver, located in the lee of Vancouver Island, has a wider range of temperatures. The mean annual temperature at Vancouver is 9.4˚C, ranging from 17.8˚C in July to 2.2˚C in January. For those months, the average daily maximum ranges from 23.3˚C to 5.0˚C , while the average daily minimum ranges from 12.2˚ to 0.0˚C. The extreme temperatures recorded at Vancouver were -17.8˚C in January and 33.3˚C in August. Extreme temperatures have a wider range at the mainland ports, with Ocean Falls recording a maximum of 103˚C and a minimum of -21.1˚C. An extreme maximum temperature recorded was 37.8˚C at Bull Harbor in June; an extreme minimum temperature recorded was -18.9˚C in January at Victoria and Masset.

Over the ocean area fronting the British Columbia coast, air temperature maxima are experienced in August and September while minimaa are experienced in January and February. In August, the median air temperature at sea is about 13.8˚C; in February, the median air temperature at sea is about 5.6˚C.

Average air temperatures over the open waters of the northeastern Pacific Ocean and the Gulf of Alaska range from about 5.6˚C in the S to 12.2˚C along the Alaska coast in winter.

In the summer, coldest air temperatures, on the average, are found W toward the Aleutian Islands, where the average is 8.9˚C and less; the warmest temperatures are around 13.3˚C off of Vancouver Island.

Southeastern North Pacific Ocean (including the W coast of Mexico and Central America)

General.—The North Pacific Ocean subtropical high is a primary climatic feature of the entire area. Its center roams an area bounded by 30˚N and 38˚N and 132˚W and 160˚W. The high expands and intensifies as it moves poleward and W from winter to summer. Its counterpart in the South Pacific Ocean, off the coast of South America, also affects the climate of this area. Between these Pacific Ocean subtropical highs lies the Intertropical Convergence Zone (ITCZ), the area's most important climate feature. Like the subtropical high, the ITCZ moves N and S with the sun. To understand the ITCZ is to know the wind, cloud, and rainfall regimes in this area.

During the winter season (December to April), most of the ITCZ lies just S of the area; consequently the area is under the influence of the northeast trades. During April and May, the ITCZ begins its N progression. Most of the area remains under the influence of the Northeast Trade Winds; the Southeast Tade Winds are just beginning to reach the S portions of the area. By August, the ITCZ is spread out between 5˚N and 18˚N. The Southeast Trade Winds achieve their maximum N penetration, which can be close to 8˚N, in some areas. During the transition months of October and November, the ITCZ retreats S. Once again the Northeast Trade Winds dominate the area.

There are few weather problems when navigating these waters; local winds, tropical cyclones, and the lTCZ are the main ones. Winter and spring are usually the best seasons, as the ITCZ is far S and tropical cyclones are rare.

Tropical Cyclones.—Tropical cyclones are encountered in the waters between 10˚N and 30˚N from the Central American-Mexican coast W. Although tropical cyclones can form in any month, they are most prevalent from late May through early November. August is the most active month; however, early and late season storms are often more intense. In recent years, an average of 16 storms have formed in these waters each year. About seven of these storms have been classified as hurricanes; this figure may be low, since a lack of observations close to the center makes it difficult to tell if the storm has reached hurricane intensity.

August is the heart of the eastern North Pacific Ocean tropical cyclone season. During this month an average of 4.3 tropical cyclones (tropical storms and hurricanes) develop, with 2.2 reaching hurricane strength. In June, an average of 1.5 tropical cyclones are observed and by October, the average falls to 2.2. The frequences for the year can be found in the first section.

Early and late season tropical cyclones usually form close to the coast, parallel to the coastline, and recurve onto the mainland anywhere from the Golfo de Tehuantepec to northern Baja California. About three each season cross a coastline. Once inland, they dissipate rapidly. Midseason storms, which form in a wide band from the Mexican coast to the Hawaiian Islands, either parallel the coast or move in a more W direction.

Forward speeds of tropical cyclones are variable in all areas of the world; in this area, since most storms remain below 30˚N, the variation of speed is less. Average speeds range from 7 to 12 knots, while extremes range from stationary to 25 knots. Average forward speeds are highest in August (10 to 12 knots) and lowest during June (7 to 8 knots). Tropical cyclones rarely move faster than 15 knots below 15˚N; the slowest speeds are observed when the storm is recurving or making a tight turn.

The main features of hurricanes in this region are their size, ability to intensify quickly, and seasonal preferences. The radius of hurricane-force winds seldom exceeds 50 miles and often extends no farther than 30 miles; winds may increase from 40 knots, 50 miles from the center, to 140 knots within 10 miles of the center. These storms often intensify rapidly; it is not unusual for winds near the center to increase from 40 to 100 knots in less than 12 hours. This is particularly true in October storms.

Winds.—The Northeast Trade Winds that blow over this area are steady winds that have their origins in the clockwise flow around the North Pacific Ocean high. Near the Mexican coast, they are diverted to the N through WNW by the coastline and other local effects. For most of the year, these trades extend S to about 10˚N, but in the winter season they dominate almost the entire area. These steady winds blow at a mean speed of nearly 15 knots.

The Ssoutheast Trade Winds migrate N, with the ITCZ, during the spring. They make their greatest penetration during August. Their name is misleading, in this region, since these trades, moving on clockwise-curving paths, actually reach the area as weak S or SW winds.

Within the ITCZ the Northeast Trade Winds and the Southeast Trade Winds converge to form a zone of light and variable winds. Winds of less than 10 knots are characteristic in this zone; during November, winds are less than 10 knots 80 per cent of the time. During August, when the ITCZ expands to its greatest coverage, winds are less than 10 knots about 50 to 80 per cent of the time.

Local and Coastal Winds.—Except for tropical cyclones, most gales are the result of local effects. The tehuantepecer, a local wind in the Golfo de Tehuantepec, is caused by intense continental highs that move S from the U.S. over the Gulf of Mexico. The air flows into the narrow Tehuantepec Pass and then rushes violently down to the gulf, frequently spreading over the entire area and is felt out to 100 miles at sea. Although there may be a preliminary squall, skies are most often cloudless. Wind direction is NE thru NW, and the duration of the gale depends on extent, strength and permanence of the controlling high; gales may last for a few hours or continue for several days. Salina Cruz, at the head of the gulf, has 140 days of gale force winds each year. These winds are most frequent in the winter; they are recorded more than 1 per cent of the time in the gulf, and Salina Cruz averages about 20 days per month with gale force winds from November through January.

When this same phenomena occurs farther S, along the Wcoast of Central America, the wind is called papagayos; this name was taken from the Golfo de Papagayo on the upper Costa Rican coast. These N through NE gales are observed from just E of the Gulf of Tehuantepec to lower Costa Rica and are encountered mainly in harbors and inlets such as the Golfo de Fonseca, the harbor of Corinto, and other Central American ports. Usually the papagayos is weaker than the tehuantepecer, although it can reach gale force. These winds are most frequent in January and February .They often last 3 or 4 days without interruption, except for a weakening between 0700 and 1000.

During the rainy season, local gale force winds, associated with violent thunderstorms, are common along the entire coast. These squalls are known as Chubascos. They are prevalent in May and October, sometimes occurring day after day. They occur in the late afternoon. As the storm breaks, SW winds suddenly veer to the ENE and often reach gale force.

Sometimes in the summer, a SW or W flow will briefly intensify to gale force and cause heavy seas. These winds are called temporales and are occasionally observed along the Central American coast during July and August.

Land and sea breezes attain their greatest development along the coasts in summer, when the strength of the general circulation is at the minimum. These breezes, blowing onshore during the day and offshore at night, may extend out to 10 miles at sea in the vicinity of bays and inlets. In the Gulf of California, the land-sea breeze regime prevails through the year. It is weakest along the coast of lower Baja California.

Precipitation.—The ITCZ is one of the principal precipitation areas in the world. Pronounced convergence, high temperatures, and strong convective activity combine to produce heavy year round rainfall in this zone. The wet and dry seasons along the Central American and Mexican coasts can be traced to the movement of the ITCZ; the dryness of Baja California reflects the limits of its N movement. Other than the ITCZ, rainfall in this area comes from tropical cyclones and local showers.

Tropical cyclone activity is rare S of 10˚N, so this region is dependent on the ITCZ and local air mass showers for its rainfall. Annual totals along the Panama and the lower Costa Rica coasts average between 1,250mm to 3,750mm. These amounts depend on exposure; for example Palmar Sur, Costa Rica and Balboa Heights, Panama are at exactly the same latitude, but Balboa Heights records 1,775mm annually, while the more exposed Palmar Sur is doused by 3,700mm. Characteristic of rainfall in this area is a relatively dry winter, followed by a secondary maximum in spring, a lull in summer, and a peak in fall (usually October). At Palmar Sur, a 50mm average in February gives way to a 430mm average in May, which drops to 380mm in August, and peaks near 835mm in October.

Along the coast from upper Costa Rica to Guatemala, annual averages range from 1,270mm to 2,030mm. While few tropical cyclones cross this stretch of coast, many form in offshore

waters and spread rain along the coast. Maximum totals are recorded in October or September; a secondary is observed in June, and a minimum occurs in February. Tropical cyclone activity is reflected in the high June average rainfall and the maximum 24-hour amounts, which are highest in June; San Salvador, El Salvador recorded 193mm one day in June.

Along the Mexican coast from the Golfo de Tehuantepec to Mazatlan, annual average rainfall ranges from 760mm to 1,500mm. This reflects the N influence of the ITCZ plus vigorous tropical cyclone seasons. In years with exceptional tropical cyclone activity, yearly rainfall totals can reach 1,500mm to 2,250mm. Heaviest rainfall occurs in either June, August, or September, while smallest amounts are usually observed in March. The variation in rainfall between May and June is often dramatic; Acapulco records an average of 36mm in May; this jumps to 325mm during June. A potent tropical cyclone can cause enough rain in 24 hours to nearly match the monthly average at many ports. In the dry season, an average of less than 25mm falls from about November through April.

Along Baja California and the northern Mexican coast, rainfall is scanty, averaging about 150mm to 300mm annually. This area depends on tropical cyclones for significant rainfall, and maximum amounts occur in September and October; extreme northern Baja California, under the influence of extratropical weather, has a winter maximum. An active tropical cyclone season in this region can increase amounts significantly; La Paz, which has an annual average rainfall of 180mm, once recorded more than 600mm in one year. Abnormal extratropical activity, usually associated with a breakdown of the North Pacific Ocean high, can cause monthly totals up to 200mm as far S as the southern tip of Baja California. On the other hand, there have been below normal years when annual totals of 50mm to 75mm were common. In areas of light rainfall, totals are often more variable than in the wetter regions.

Over N sections, subsidence and divergence from the subtropical high produces a widespread inversion, resulting in a stable atmosphere and thunderstorms on 10 days or less each year. Conversely, convergence and convection near and within the ITCZ causes unstable conditions over S sections, resulting in a high frequency of thunderstorms. Average days with thunderstorms range from less than 20 days over open water to more than 100 days along the coast each year. Thunderstorms occur throughout the year in the ITCZ, but concentrations over open water are most evident from June through October, and are often associated with tropical cyclones traveling W along the ITCZ.

Along the southern Mexican and Central American coasts, the ITCZ is only partially responsible for the high frequency of thunderstorms. Daily heating, nocturnal cooling aloft, and local squall lines contribute to frequent and often violent thunderstorms. Activity is most frequent along the southern Mexican coast from July through September and along the Central American coast from May through October. The arid coastal regions of northern Mexico, including Baja California, experience isolated thunderstorms, mostly in July and August; these are caused by intense coastal heating.

Cloud Cover.—Cool Northeast Trade Winds blowing over warm water, warm air moving over the cool California current, and convergence in the ITCZ are responsible for the cloudiness in this area. The range of mean cloud cover varies from 20 to 80 percent, while more common averages are in the 40 to 70 per cent range. Divergent winds from the North Pacific Ocean High and a N overland flow are responsible for minimum cloudiness along the southern Mexican and Central American coasts. The cloudiest region lies in the area of minimum precipitation; over the seas in the NW section, average sky cover is around 7/10. This is the area of fair weather cumulus that form as the Northeast Trade Winds pass over warm water.

From November through April, there is an area of minimum cloudiness cloudiness along the Mexican coast. This results from a flow of cool dry air, including the northers that originate in the Gulf of Mexico. At Salina Cruz, in the Golfo de Tehuantepec, clear conditions are found on 20 days or more each month from November through April; in December and January, an average of 25 days each month are clear (less than or equal to 2/10 sky cover). Clear skies are also common along the Central American coast from December through March.

Summer is the cloudy season; the ITCZ is farthest N and the trade winds are more active. Cloud cover in the ITCZ ranges from 5/10 to 7/10 and is greatest during the summer and fall season. From May through September, cloud cover averages about 7/10 along the Central American coast.

Visibility.—Visibility in this region is usually excellent. The main restriction is heavy rain in the ITCZ, which often reduces visibility below 5 miles but seldom below I mile. Fog is rare and is only found, with any degree of consistency, N of 26˚ N.

South of about 15˚N, during the summer and fall, visibilities are reduced below 5 miles 5 to 10 percent of the time offshore, and reduced below 0.5 mile more than 1 per cent of the time off the W coast of Panama in the fall. At other times, visibility rarely drops below 5 miles; S of 20˚ N, fog is almost unknown at sea. At night, fog may occasionally develop in narrow gulfs or estuaries, if there is little or no wind; it disperses shortly after sunrise. There is no season for such fog.

Another restriction to visibility is a light dust haze that forms during the dry season and reduces visibility below 5 miles for as much as several days a month.

In the Golfo de Tehuantepec, visibilities are less than 5 miles less than 5 per cent of the time; the peak month is September, which is the heart of the rainy season. In the winter season, visibility may be reduced to below 5 miles up to 3 per cent of the time by dust haze from the offshore northers.

Salina Cruz records genuine fog on about 1 day in June and 5 days annually. Fog frequency increases N along the coast; at Mazatlan, fog is most frequent from March through May, when it occurs on 1 to 3 days a month. A NW flow over the relatively cool California Current is responsible for this increase.

At La Paz, fog forms when cool air moves over warmer waters. From December through May, fog at this port occurs, on the average, 2 to 4 days a month and 18 days annually.

Along the W coast of Baja California, fog is most frequent from June through November, when warm air is cooled by upwelling of the California Current. Visibility less than 1 mile is observed less in August and September than in other months during this period because of the high surface temperatures.

During this same period, visibility restrictions less than 5 miles occur from time to time over the northern Gulf of California. Just S of the Baja Peninsula, there are 23 days annually, with visibility less than 5 miles; eight of these days occur during May and June.

Temperature.—There are two temperature cycles in these waters. South of about 15˚N, temperatures are greatly

influenced by the position of the ITCZ. The warmest season is February through April when the ITCZ is farthest south, resulting in clear skies and efficient radiational heating. From Balboa Heights, Panama to Acajutla, El Salvador, daytime readings are in the low 30s (˚C), while nighttime lows drop into the low 20s (˚C). As the ITCZ moves N, temperatures begin to fall and the rainy season becomes the cool season. Rainfall and cloud cover cut down on the radiation and the cool Southeast Trade Winds also help to drop temperatures. October is usually the coolest month. Maximum temperatures range from the mid to low 30s (˚C) while minimums are in the low 20s (˚C).

North of 15˚N, temperatures are more variable. Cooling is underway in November as air temperatures closely resemble the underlying sea surface temperatures. Temperatures increase S; average daytime maximums increase from 21.7˚C at Ensenada to 31.1˚C at Acapulco. The greatest temperature increase is along the Baja California coast; the difference in the average November temperature is 6.7˚C between Ensenada and La Paz and only 5.0˚C between La Paz and Acapulco, a much greater distance.

The cooling trend continues and by January, the advection of cool air is felt to 10˚N. Average daily minimums range from 18.3˚C in northern Baja California to the upper 20s (˚C) along the southern Mexican coast. Nighttime lows range from the upper single digits (˚C) to the low 20s (˚C). By May, the warming trend is in progress. Average daily maximum temperatures range from the upper teens and low 20s (˚C) in the N to near 32.2˚C along the southern Mexican coast. Nighttime lows range from the low teens (˚C) to the low 20s (˚C).

The warming trend in the N reaches a peak about August. The thermal equator reaches its maximum N position and daytime highs range from the mid 20s (˚C) in the N to near 32.2˚C along the southern Mexican coast; temperatures over the S position are held down to near May levels by cloud cover and rain from the ITCZ. The temperature cycle is completed during September and October, with the onset of cooling in the N.

Temperatures over the area rarely go above 43.3˚C or below 4.4˚C; one February night, La Paz recorded a temperature of slightly below 0˚C, while one hot August day, the temperature at Guaymas reached 47.2˚C. Temperatures are most variable along the Mexican coastline; La Paz, for example, has recorded a 42.2˚C reading, while Guaymas has recorded a 5.0˚C. The section between Manzanillo and the Guatemalan border is often the hottest. Temperatures along the Central American coast reach 37.8˚C or more, but cloud cover and rain keep this from being a common occurrence.

Northwestern North Pacific Ocean (including the Sea of Okhotsk and the Bering Sea)

General.—Day to day weather is largely determined by the almost constant progression of extratropical cyclones with their frequent gales and abundant precipitation. The result is cold snowy winters with frequent blizzards and cool rainy summers with persistent fog.

Extratropical Cyclones.—An almost continuous stream of extratropical cyclones move into and across the area. Many form in the waters around Japan and move NE into the Bering Sea or ENE into the Gulf of Alaska. Occasionally storms will move off the Siberian continent across the Sea of Okhotsk and either Sakhalin or the Kuril Islands. Storms may also move N along the E or W shores of the Bering Sea and into the Bering Strait, where they are usually blocked by an arctic high pressure cell. Bering Sea storms are often in a mature stage and tend to stall and fill along the W or S coasts of Alaska. Extratropical lows are most intense in fall and early winter, but most numerous in spring. Activity reaches a minimum during July and August; September is a short transition season and by October storms are numerous and intense.

Tropical Cyclones.—Hokkaido is on the N border of the usual tropical cyclone paths. Most of these warm season storms start recurving farther S, and hence are well E of Hokkaido by the time they reach 40˚N. Tropical cyclones that enter the Sea of Japan have the best chance of affecting the area, either in a tropical or extratropical state.

Some typhoons turn extratropical as cold air intrudes into their circulation at temperate latitudes. These extra tropical storms can grow to almost double the size of the typhoon while remaining almost as potent. The chances for a tropical cyclone, or tropical cyclone turned extratropical, to affect this area are best from July through September. The highest frequency is in September.

Winds.—Over the Sea of Okhotsk and the Bering Sea, winds may be characterized as variable. This variability is induced by the steady procession of extratropical cyclones with their attendant frontal systems. Any monsoonal influence in this area weakens N. In October, there is a radical increase in wind speeds and gale frequencies. By November, average wind speeds have reached a 20-knot annual maximum in the Bering Sea and are approaching the 22-knot winter maximum in the open Pacific Ocean waters. During the winter months, gale frequencies over 20 per cent occur in the waters SE of Kamchatka. Autumn and early winter winds are also very strong in the Sea of Okhotsk. South of 50˚N, winter winds show some evidence of the N monsoonal flow and can be expected up to 30 per cent of the time in this area (42˚N to 50˚N.) North of 50˚N, prevailing wind directions shift counterclockwise around the Aleutian Low and clockwise around the Siberian High. Late winter average wind speeds drop to 17 to 19 knots in the Bering Sea as storms are in their decaying stages when they reach this area. Spring starts an overall decline in wind speeds as extratropical cyclonic intensity wanes. Average speeds drop to less than 15 knots by May. Low wind speeds are the outstanding summer weather characteristic. The averages are near 12 knots; gales are encountered less than 5 per cent of the time throughout the area. Summer winds take on a S component.

Local Winds.—Modifications of the prevailing winds are almost always present in the vicinity of coastlines. The generally complex configuration and rugged terrain of this area's coasts and islands can greatly alter wind speed and direction. Local topography may cause increases in wind speeds through straits and passes and around capes or points. This can result in gusts or persistent winds of gale force. At the same time, sheltered leeward bays may experience only light and variable winds.

Coastal winds tend to parallel the coastline. Along mountainous coasts, air from the higher altitudes may strengthen coastal flow enough to cause gale force winds. This is most likely in autumn or early winter after temperatures have been abnormally low inland for several days.

In the S part of the area, the weak S monsoon permits development of land and sea breezes in summer. These winds may be felt out to 15 miles at sea.

Along the W shores of the Bering Sea, the ravine or valley wind blows down to the coast, sometimes reaching 100 knots or more. Valley winds are most common in winter, spring, and fall. In summer, very strong winds occasionally blow into estuaries and may continue upriver for 100 miles or more.

Coastal Winds—Hokkaido and the Kuril Islands.— Along most of the W coast of Hokkaido, W to NW winds are common in winter; SE through SW winds are common in summer. Along the other coasts, winter winds are more variable while summer winds are commonly from the E through S.

At Otaru, SW to S winds are most common; NW to W winds are often strong enough to impede cargo handling. Extreme wind speeds have reached 54 knots in September.

At Wakkanai, W to NW winds prevail from November through January. In February and March, winds are variable; from April through October, SW winds are common. Average wind speeds are highest in December (11 knots) and lowest in July and August (8 knots). Wind speeds less than or equal to 19 knots occur on an average of 13 days in January and 4 days in August.

At Hakodate, W through NW winds prevail from November through March, while SE through E winds are common in summer. Winds greater than or equal to 19 knots occur on about 12 days per month in winter and 3 days per month in summer.

At Muroran, NW winds which raise a sea occur from mid-September until the end of March.

In Nemuro Kaikyo, gales accompanied by rain or snow are common from November through March, while SE winds may be accompanied by squalls in May and June.

At the port of Nemuro, winds greater than or equal to 19 knots occur on about 12 days per month in winter, but only 2 days per month in summer.

Wind speeds in La Perouse Strait average 16 knots during winter. Gales are most frequent in December and January with squalls common in November and December. Summer winds are usually light, averaging 6 to 8 knots from May through August. Strong local SW winds are often encountered off the NW tip of Hokkaido in summer, and frequent NE blizzards occur along southern Sakhalin during January and February.

Due to the close passage of extratropical lows, winds are variable in the Kuril Islands. The coasts of Ostrov Kunashir are the scenes of many NW blizzards in winter. At Reyd Tyatinskiy, NW winds often bring good weather in winter. In the spring E and SE winds are frequent and bring fog. Near Ostrov Iturup, strong NW winds raise heavy seas from November through April. At Zaliv Kasatka, occasional SE gales raise heavy seas during February and March. In Zaliv Shelikhova, E gales often blow off the mountains.

Coastal Winds—Southeast Coast of Russia, Sakhalin, and Tatar Strait.—In this area, winter winds are N in the S and change to NW farther N. Summer winds are more variable and lighter, with prevailing directions opposite those of winter.

At Vladivostok, winter wind speeds usually increase from 8 knots in the morning to 10 knots by afternoon. Summer winds also have a diurnal range of 2 knots as average speeds increase from 5 knots to 7 knots. Winds of 28 knots or more occur on 3 to 5 days per month from September through May and on only 1 day per month in July.

At Nikolaevsk, gales are common on about 2 days per month in November and December.

Along the W and E coasts of Sakhalin, winter winds are usually from the NW; in summer SE winds at night usually veer to S or SW in the middle part of the day.

At Kholmsk, average wind speeds vary seasonally but not diurnally. They range from 5 to 7 knots in June and July to 10-13 knots from October to February. Gales are rare and, even in the winter months, are observed on just 1 day per month.

At Aleksandrovsk, winter winds are frequently out of the E and SE, but the NW winds are stronger. Here the average number of days with gales ranges from 7 in October to 2 in June and July.

Coastal Winds—The Sea of Okhotsk, Kamchatka, and the Bering Sea.—Along these coasts, summer and winter prevailing winds are often directly opposite. In general, winds are offshore in winter and onshore in summer. Much of this coastal region is mountainous; this results in very local winds flow.

On the S shores of the Shantarskoye More, the winter monsoon is predominantly W and changes with the lie of the coastline; it becomes NW and then N between Udskaya Guba and Okhotsk.

Between Okhotsk and Penzhinskaya Guba, the prevailing winter direction is NE, while summer winds are much more variable. Gales are frequent on some parts of this coast. For example, at Pestraya Dresva, winds of 28 knots or greater occur on an average of 2 days out of every 3 from November through February. At more protected locations like Okhotsk, this frequency drops to about 1 to 2 days per month.

Along the west coast of Kamchatka, winds of 28 knots or more occur on 10 to 11 days per month during March and April and 1 day or less per month from July to September.

At Ozernaya these wind speeds occur on 4 to 8 days per month from November through April and are rare from July to September.

Along the SE coast of Kamchatka, mean wind speeds show a large seasonal variation. At Petropavlovsk, summer wind speeds average 7 to 8 knots while winter speeds average 15 to 18 knots. The average frequency of winds with speeds of 28 knots or more ranges from 5 to 7 days per month from October through April to 1 day per month in June and July.

Coastal winds N of Petropavlovsk show a marked reversal of direction in June and a remarkably high percentage of calms. For example, calms are more prevalent than any wind direction at Ostrov Beringa from September through November.

At Anadyr, calms are frequent in April and May, while at Uelen they are frequent in winter and summer. Wind directions are influenced by the shape of the coastline; this results in prevailing winds from theN through NE from about October through May. Summer winds are mainly from the S or SE. For example, at Ust Kamchatsk, winds are out of the S more than 45 per cent of the time during July. Mean wind speeds show little diurnal variation, but a definite seasonal change. Average winter winds range from 12 to 20 knots from the Kamchatka Peninsula to the Bering Strait. During the summer, these speeds drop off to 6 to 8 knots S of St. Lawrence Island and to 6 to 12 knots in the Bering Strait. Gales occur on 5 to 8 days per month in winter and on less than 1 to 2 days per month in summer. At Uelen, however, the change from a due N wind to a July S wind, brings an increase of from 1 day with gales to 6 days with gales.

Climate—Hokkaido, Sakhalin, and the Sea of Okhotsk.—This is an area where many factors influence navi-

gation. In winter, ice, winds and seas severely restrict navigation in these waters. During spring and summer, fog is an important navigational hazard and by autumn, seas and winds are again a factor. However, take all these parameters into consideration and fall becomes the best time of the year and winter the worst, for navigating these seas. In autumn ice is uncommon, winds and seas are still well below their winter peaks, and fog frequency has slackened from its summer maximum.

Coastal precipitation decreases N in general. Average annual amounts range from about 1,200mm on the Hokkaido coast to 380 to 430mm along the shores of the Sea of Okhotsk. About one-half to one-third of these annual amounts accumulate from July through September; however, some locations record a maximum monthly amount in October or November. Winter rains are sparse and light, with most monthly averages less than 25mm.

Snow can be expected in September over the northern Sea of Okhotsk and by October along the entire coast. The snow season extends till May in the south and June in the north. There is a wide variation in the number of days that it snows. Along the leeward Russian coast, on the Sea of Japan, snow occurs about 15 to 20 days annually, and 2 to 3 days in December and January. A short distance across the sea, Otaru, Japan, on a windward coast, has snow about 124 days annually and on about 30 days every January. The Sakhalin shores receive snow on about 70 to 90 days annually while 40 to 60 days of snow are observed around the shores of the Sea of Okhotsk. Aside from Hokkaido, snow days range from 3 to 19 per month during winter. Blizzards occur frequently in winter, especially on coasts exposed to N and W winds.

Thunderstorms are least frequent in late winter and early spring and most frequent in summer and fall. For example, at Hakodate, thunderstorms are rare from January to March but occur on 1 to 3 days per month from June to November. In the Kuril Islands, thunderstorms are infrequent but occasionally occur on as many as 3 days in one summer or fall month. Along the Sea of Okhotsk, a rare thunderstorm is observed during the summer.

Monthly and annual rainfall averages can be misleading in this part of the world. For example, Okhotsk, which has an average annual fall of about 380mm has recorded more than 660mm in a single year and less than 125mm in another year. Their July average is 65mm, but this includes a 282mm total and a 9.9mm total.

Climate—The Sea of Okhotsk and Tatar Strait.—The Northwest Pacific Ocean area is one of the cloudiest regions in the Pacific Ocean. Extratropical cyclones are responsible for this cloudiness; they are aided in summer by the fog and low stratus clouds, that form as warm moist air from the S flows N over the progressively colder seas. The cloudiest region is over the waters E of the Kuril Islands.

Early summer brings almost endless cloudiness to this region. The average cloud cover over the Sea of Okhotsk is about 8/10 while along its shores, the cloud cover ranges from 6/10 to 9/10. In July, overcast conditions can be expected on 25 to 27 days on this coast. East of the Kuril Islands, the average cloud cover in July is 9/10. On the SE coast of Kamchatka and in the Kuril Islands, summer cloud cover is around 6/10. Cloud cover decreases in August, particularly over the Sea of Okhotsk, as prevailing S winds start to change to N winds. Cloud cover averages drop off to around 6/10 in the NW section of the Sea of Okhotsk but remain around 8/10 SW of Kamchatka. September and October are usually the clearest months of the year since cyclonic activity is still weak in this area; fog disappears with the more N flow. Cloud cover drops to 5/10 in the NW part of the Sea of Okhotsk and is generally less than 70 per cent elsewhere, except near the W coast of Kamchatka.

Along the Hokkaido coast, average cloud cover is least in October, when it ranges between 5/10 and 6/10. There are 12 to 15 days with clear skies during this month. By November, water in the northern Sea of Okhotsk has started to freeze near the coast, so it loses potential as a moisture source. The result is an average cloud cover of 5/10 in these waters and 7/10 over the E seas.

Winter brings increased cloudiness to areas lying near storm paths and areas exposed to a N flow. For example, at Kuri'sk and Otaru, January is the cloudiest month of the year. However, where N winds blow off the frozen sea surface or the continent, cloud cover is likely to reach a minimum in winter. For example, along the Russian coast at places like Vladivostok, Grossevichi, Aleksandrovsk, and Okhotsk, the average cloud cover is less than 4/10 and there are 15 to 20 days per month with clear skies.

By April, cloudiness over the northwestern Sea of Okhotsk has increased to about 6/10 while an overcast area appears off the SE coast of Kamchatka. Coastal areas of Hokkaido are relatively clear during this period, but on many other shores cloudiness is increasing toward its early summer maximum. There are usually 15 to 20 cloudy days along these coasts in April. May cloudiness is rather uniform over the area and is continuing to increase in the Sea of Okhotsk and Tatar Strait.

The waters along the E coast of Kamchatka and around the Kuri Islands are the foggiest in the world during the summer. Visibilities less than 1 mile occur up to 60 to 70 per cent of the time in these waters. In general, fog frequently reduces visibilities below 1 mile in summer, while winter precipitation often reduces it below 5 miles.

Summer advection fog occurs as warm moist air creeps in over the cold muddy-green Oyashio Current and the Sea of Okhotsk. As a result, fog frequency increases from late May until it reaches a peak in late July. During this peak period, visibilities less than 1 mile attain a frequency of 60 per cent or more over the central Kuril Islands and along the E coast of Kamchatka. Visibilities less then 5 miles can be expected up to 80 per cent of the time. Fog can be expected on up to 26 days per month along the W side of Tatar Strait and from 4 to 18 days elsewhere. The most fog-free areas are around Hokkaido, along the W shores of the Sea of Okhotsk, and on the west coast of Sakhalin.

Visibilities continue to be poor in the Sea of Okhotsk until late August, when winds begin to blow off the Asian continent once again. During September, conditions improve slightly over most of the area. However, visibilities less than 1 mile still occur up to 35 per cent of the time over the central Kuril Islands. In October, visibilities less than 5 miles are becoming the main problem; they reach a maximum frequency of 40 per cent around the Kuril Islands. By November, winter has begun to settle in, and reduced visibility frequencies are patterned after the precipitation frequency distribution. Visibilities less than 5 miles occur less than 25 per cent of the time, except

around northern Hokkaido and southern Sakhalin, where visibilities are often reduced by weak snow squalls. The occurrence of visibilities of less than 1 mile is less than 5 per cent in November.

Poor visibility frequencies increase from December through February, with the increase in intensity and number of extratropical cyclones. Visibilities less than 5 miles are encountered 35 per cent of the time in the waters E of the Kuril Islands and up to 40 per cent of the time to the E of Hokkaido. Visibilities of less than 1 mile are mainly encountered in the southeastern Sea of Okhotsk and E of the Kuril Islands, where they occur a little more than 5 per cent of the time.

During the winter, radiation fog is apt to occur on calm clear nights at some of the more protected ports. For example, at Vladivostok, fog can be expected on 2 to 3 days per winter month. Even so, fog is at a minimum along nearly all coasts in this season. During March and April, visibility restrictions increase everywhere except along the Hokkaido coast, where they remain at a minimum. During this period the center of maximum restrictions begins to spread N from the southern Kuril Islands until, by May, visibilities less than 1 mile occur 35 per cent or more of the time along the central Kuril Islands.

The cold Oyashio Current, winter ice, and monsoonal flow combine to make this region continental in terms of temperature. This means a large diurnal and seasonal variation and a large difference in extremes. Temperatures over water are warmest in August, when average temperature range from 10.0˚C in the northern Sea of Okhotsk to near 21˚C W of Hokkaido. The effect of the Oyashio Current is evident in the seas E of Hokkaido, where air temperatures are about 3.3˚C cooler than they are over the waters to the W. Also average temperatures reach a secondary minimum in the low teens, around the Kuril Islands, under the influence of this cold current. Summer daytime coastal temperatures range from the upper 20s (˚C) around Hokkaido to the upper teens (˚C) along the northern Sea of Okhotsk coast. Nighttime lows range from the upper teens (˚C) in the S to the upper single digits (˚C) in the N. Extreme maximum temperatures are observed during the summer and most ports have records of 32.2˚C or greater. For example, Okhotsk, one of the N ports, has recorded a 36.1˚C temperature.

An abrupt change in average temperature takes place in November. South of Sakhalin, October daytime temperatures in the low to upper teens (˚C) drop into the low to upper single digits (˚C) and even slightly below freezing, while nighttime lows fall into the low single digits above and upper single digits below freezing. For example, at Khabarovsk, a 10.0˚C daily maximum in October drops to -4.4˚C in November. Along the Sea of Okhotsk coast, daytime highs are in the low single digits below freezing (˚C) and nighttime lows drop into the low to mid single digits below freezing (˚C) and below. Over water, air temperatures decrease rapidly, both N and E. The average freezing line extends from about the middle of the Tatar Strait ENE to the S tip of the Kamchatka Peninsula.

During the winter, over water, the average air temperature freezing line extends from northern North Korea ENE to southern Hokkaido and then NE to the mid-Aleutians. The lowest coastal temperatures are most likely in January. Along the frozen coasts of the Sea of Okhotsk, temperatures climb to a little above zero during the day and fall into the minus teens at night. The warmest winter temperatures are found on Hokkaido, where daytime highs average near freezing (˚C) and nighttime minimums are in the upper single digits below freezing (˚C).

The influence of the continent and slight modifying effects of the water can be seen by comparing temperatures at Vladivostok with those at Otaru. The mean daily maximum is -1.7˚C at Otaru and -10.6˚C at Vladivostok, while the mean daily minimum is -7.2˚C at Otaru and a cool -17.8˚C at Vladivostok. Both ports are at approximately the same latitude. The continental influence is even more apparent when both these ports are compared with La Coruna, Spain, at about the same latitude, which has an average daily maximum of 12.8˚C, an average daily minimum of 6.7˚C, and an extreme low of 1.1˚C. Extreme minimum temperatures in this region drop to -17.8˚C at Otaru, -45.6˚C at Okhotsk, and -30.0˚C at Vladivostok.

There is a more gradual temperature change in spring than there was in fall, except along the N coast of the Sea of Okhotsk. where average temperatures jump 4 to 6˚C from March to April. Daytime highs in the single digits below freezing (˚C) in March climb into the low single digits (˚C) in April. Farther S, temperatures gradually increase from February on. By May, daytime highs are in the low to mid teens (˚C), while nighttime lows drop to the low to upper single digits (˚C). Over open water, average air temperatures are also rising and the freezing isotherm has retreated into the far N reaches of the Sea of Okhotsk. Average air temperatures are around 10.0˚C off southern Hokkaido.

Climate—The Bering Sea and the E Coast of Kamchatka.—Winds and ice in winter, fog in spring and summer, and winds and seas in autumn all influence navigation in the Bering Sea. Taking all parameters into consideration, winter is by far the worst season and spring is best. Spring is just a little better than summer, which is a little better than fall. In spring, winds have died down from their winter maxima, fog has not reached its peak, ice is beginning to thaw, and seas are as calm as they are during any season.

The frequency, intensity and amount of precipitation are related to the available water vapor in the air which, in the northern Bering Sea in winter, is restricted by cold temperatures and lack of moisture sources. The large number of extratropical cyclones account for the substantial precipitation over the southern Bering Sea. For example, Uelen, in the N, has an average annual total of about 300mm compared to an average of 1,650mm at Adak in the Aleutian Islands.

In autumn, precipitation, occurs 25 per cent or more of the time in a band from the Aleutian Islands N to about 58˚N. At St. Paul Island, for example, precipitation occurs on 20 to 22 days per month from September through November. Over the northern Bering Sea, frequencies range from 15 to 25 per cent and by October most of the precipitation is snow. In the south, snow is rare before November.

Winter is the rainy season across the southern Bering Sea, where precipitation occurs from 15 per cent to greater than 30 per cent. In the N, these frequencies run 10 to 15 per cent, almost all of which is snow. In the S, snow and sleet occur 15 to 20 per cent of the time that there is precipitation. Along the east Siberian coast, average monthly winter amounts range from 25 to 75mm along the E coast of Kamchatka to a scanty 8mm at Anadyr. In spring, precipitation frequencies drop off to 10 to 15 per cent, with snow seen only 5 to 10 per cent of the time when precipitation occurs in May.

Many coastal locations have minimum monthly amounts from March through June. Summer precipitation reaches a maximum in the N and is on the increase in the S. Coastal monthly averages in summer range from 90mm at Ust Kamchatsk to 530mm at Uelen.

Thunderstorms are rare even in summer, when at most, an average of one occurs along the Alaskan coast and in the Aleutian Islands.

Cloudiness in the Bering Sea is produced by extratropical cyclones aided in the summer by warm air advection. In the fall average cloud amounts range from 7/10 along the Siberian and Alaskan coasts to more than 8/10 in the Bering Strait and over the southern Bering Sea. Along the E coast of Kamchatka and Siberia, skies are cloudy {sky cover greater than or equal to 8/10) about 10 to 18 days per month while near the Bering Strait, at Gambell, cloudy skies are observed an average of 25 to 27 days per month. Cloudiness diminishes to less than 6/10 in the winter over the northern Bering Sea.

Along the Siberian coast offshore winter winds are often associated with clear skies. For example, at Anadyr in January an average of 10 days have clear skies (sky cover less than or equal to 2/10). At Uelen, there are about 10 cloudy days in January, compared to 22 cloudy days at St. Paul Island in the S. Average cloud cover is around 7/10 or more over the southern Bering Sea.

Spring and summer are the cloudiest seasons in general. A significant change occurs from April to May, when mean cloud amounts increase, particularly in the N where seas are thawing. Mean cloud amounts are about 8/10. Along the Kamchatka and Siberian coasts, cloudy skies are observed on 15 to 25 days per month; the highest frequency is in the S. Frontal activity and warm air advection bring a greater than 9/10 mean cloud cover to the Aleutian Island region in June and to almost the entire Bering Sea by August. Coastal areas observe overcast conditions on 25 days per month or more. Fog and stratus are a major factor, aided by a maximum in extratropical activity N of 60˚ N. Toward the end of August and in September, a decrease in cloudiness becomes apparent.

Visibility is affected by rain, snow, fog, arctic haze, inferior and superior mirages, and extended periods of twilight. Rain, arctic haze, mirages, and twilight cause frequent restrictions of less than 5 miles but, except for rain, rarely produce restrictions less than 0.5 mile.

As fall progresses, daylight hours decline; this lack of illumination noticeably reduces the distance at which objects may be identified. During the fall, snow and blowing snow gradually replace rain and fog as restrictions to visibility over the northern Bering Sea and rain replaces fog in the S. In autumn, visibilities less than 5 miles are more common than visibilities less than 1 mile and they occur 15 to 20 per cent of the time over most of the sea; they reach 25 per cent in the Gulf of Anadyr. Most coastal locations observe fog on 1 to 2 days per month.

In winter N of 60˚ N, snow and blowing snow reduce visibilities to less than 5 miles 15 to 20 per cent of the time; visibilities less than 0.5 mile are observed 5 to 10 per cent of the time. Farther S, snow and rain cause visibilities less than 5 miles 15 to 20 per cent of the time while visibilities less than 0.5 mile are rare.

Ice and steam fog occur locally in winter. Ice fog occurs when moisture is introduced into very cold air (usually with a temperature of -29˚C or colder). This fog is shallow but may cover a ship when moisture is produced by engine exhausts and steam outlets. Steam fog occurs above frozen seas when strong tides or other phenomena crack or break the ice and expose lanes of water to the extremely cold air above. Steam fog, called arctic smoke, covers small areas and normally dissipates rapidly. It can often be used to identify open water in winter.

By spring, the frequency of poor visibilities is on the rise, with an increase of fog and rain. In and around Bristol Bay, visibilities less than or equal to 0.5 mile occur 5 to 15 per cent of the time and elsewhere 5 to 10 per cent of the time. By May, fog is observed up to 9 days per month along the Kamchatka Peninsula and Siberian coast.

June, July, and August bring the worst visibilities. Fog is particularly intense S of 60˚N, over the northwestern Bering Sea and in the Anadyriskiy Zaliv. Visibilities equal to or less than 0.5 mile occur greater than 40 per cent of the time off Mys Olyutorskiy and 15 per cent or more of the time W of 175 W. They occur between 5 and 15 per cent elsewhere.

Visibilities less than 5 miles occur up to 65 per cent of the time N of the Aleutian Islands. They occur from 30 to 50 per cent of the time over the northwestern Bering Sea and 10 to 25 per cent of the time from Norton Sound to St. Lawrence Island. Fog occurs on 10 to 20 days per month along the western Bering Sea coast. As summer comes to an end, a general improvement in visibility sets in over the entire area.

Air temperatures are colder than those at comparable latitudes in the Atlantic due to lack of a major warm ocean current, the proximity of permanent polar ice, and the strong continental influence. In general, the cold Oyashio Current brings coldest air temperatures to the western Bering Sea. The annual range of average monthly temperatures is up to 10˚C in the N and around -6.7˚C in the S. Average winter temperatures over the open sea range from around 2.2˚C in the eastern Aleutian Islands to -17.8˚C in the Bering Strait, and -20˚C in the N part of Anadyriskiy Zaliv.

Along the E coast of Kamchatka, average daily maxima range from -9.4˚C to -6.7˚C, while minima range from -16.7˚C to -12.2˚C. Farther N, temperatures drop rapidly and at Anadyr in January, the average daily maximum is -22.8˚C and the daily minimum is -7.8˚C. Extremes range from a -46.1˚C reading at Anadyr to -12.2˚C to -11.1˚C readings in the Aleutian Islands.

By May, incoming solar radiation approaches a maximum and pronounced warming is apparent. In the N, average temperatures have risen about 14˚ to 17˚C since February. At Anadyr, the average daily maximum rises from -20.6˚C in February to -1.1˚C by May. Average air temperatures over open water in May range from the mid-single digits (˚C) in the Aleutian Islands to about -3.9˚C in the Bering Strait; the freezing isotherm is N of 60˚N.

Along the E coast of Kamchatka, average daytime highs are near 4.4˚C and lows are near freezing. Maximum temperatures usually occur in August. Average temperatures range from the low teens (˚C) along the Aleutian Islands to about 7.2˚C over the Bering Strait.

Even along the coast, the range of temperatures is small. At Petropavlovsk, the average daytime maximum is 15.0˚C compared to an 11.1˚C reading at Anadyr. These two ports have spread of about 17˚C in January. Nighttime August lows are usually in the mid to upper-single digits (˚C). Extreme maximums reflect the continental influence; they range from 28.9˚C at Petropavlovsk to 23.9˚C at Anadyr. This can also be seen

when comparing the 23.9˚C extreme at Ust-Kamchatsk with a 17.2˚C reading at the nearby island location of Ostrov Beringa.

In September, temperatures gradually begin to fall and by October ice is forming along the northern Bering Sea coast. Average air temperatures in November range from the mid-single digits (˚C) in the Aleutian Islands to around -13.3˚C in the northern Gulf of Anadyr. The freezing isotherm is between 56˚N and 57˚N. Along the coast, temperatures take their biggest fall from October to November. This drop averages about 8 to 11˚C. At Anadyr, the average daily maximum temperature drops from -3.9˚C in October to -14.4˚C in November. At Gambell, a more maritime location, the average daily maximum drops from 1.7˚C in October to -2.8˚C in November.

Southwestern North Pacific Ocean (including the East China Sea, the Yellow Sea, and the Sea of Japan)

Extratropical Cyclones.—These storms often follow two paths. In the N, lows originating over mainland China or eastern Siberia move SE toward northern Japan and then swing ENE. A second tract begins either in the South China Sea or near the Ryukyu Islands and parallels the E coast of Japan. These storms begin as weak systems but intensify rapidly over water. In winter they are intense and bring cloudiness, strong winds, and snow or heavy rain. Korea is less affected than most coastal areas; however, occasionally an intense storm in the waters adjacent to Korea will cause strong winds and snow, particularly along the S coast.

Extratropical cyclonic activity frequency reaches a peak in May and June in the seas off the mainland, then declines rapidly to a minimum by July. After September, there is an increase in storm activity along the northern tracks, and by December, lows are common along both paths. Throughout the year the waters E and S of Japan are the breeding grounds and areas of intensification for extratropical cyclones, particularly during the winter and spring. Spring and summer storms are often weak systems bringing just cloudiness and rain.

Tropical Cyclones.—Most of this region's 30 annual tropical cyclones are observed from July through September. An average of 20 of these tropical cyclones reach typhoon strength (winds greater than or equal to 64 knots). The seas E of Taiwan are the hot bed of activity, with an average of four to five tropical cyclones (tropical storms and typhoons) each season. An average of three tropical cyclones pass just S of southeastern Honshu. Korea's S coast can expect one tropical cyclone each season while the Yellow Sea hosts one every 2 years.

The waters around Taiwan and the Ryukyu Islands are often the site for any pre-May tropical cyclones. By May, a storm will occasionally reach the SE coast of Honshu or the East China Sea. August and September are the most likely months for encountering a tropical cyclone. They are most likely in the waters off southeastern Honshu in August and off Taiwan in September. A full-fledged typhoon is always more likely in the southern portions of the region.

Tropical cyclones cross the China coast between Hong Kong and Tsingtao several times each year. The most active area lies between Hong Kong and Fu-chou during September. Typhoons passing E of Honshu do not usually affect northern Honshu or Hokkaido. However, the storms that enter the Sea of Japan usually remain intense, either as tropical or extratropical storms, and move E across northern Honshu or Hokkaido.

Most of the tropical cyclones that strike Korea have been weakened by the cold water and mountainous terrain. Rainfall from these weak storms can be destructive, particularly on Cheju Do and along the S and W coasts of the Korean peninsula. Land areas of the southwest Pacific Ocean are susceptible to severe flooding and landslides. These conditions are caused by the torrential rains over mountainous terrain and are as likely with a tropical depression as with a typhoon.

The supertyphoon is the name given to the violent tropical cyclones of this region that generate maximum sustained winds greater than or equal to 130 knots. An average of six typhoons each year reach this supertyphoon category. Most occur from June through December, with September the most likely month. The Philippine Sea is the area where a typhoon is most likely to first achieve the super category; the most likely areas of encounter in the region under consideration are E of Taiwan and E of the Ryukyu Islands.

Winds.—Two monsoonal systems are responsible for the general wind circulation in this region. Winds generally have a S component in summer and a NW component in winter. The winter monsoon is stronger. Topography and migratory lows exert a strong influence on these general wind patterns. Ports protected by mountains often experience light and variable winds, while those less protected have stronger less variable winds. Lows moving along the southeast coast of Japan cause variation in wind directions over those waters. Strongest winds in the region occur along the W coast of northern Honshu and in the cyclonically active region along the S coasts of the Japanese mainland and northern Ryukyu Islands.

During the fall, the Northwest (winter) Monsoon advances SE from the Asian continent. It gradually increases in strength and steadiness so by November's end, winter winds have pervaded the entire region. Average wind speeds range from 12 to 20 knots over open waters. The first signs of slackening usually come in March, with diminishing cyclone intensity and a weakening of the Siberian High and Aleutian Low. Gradually, a reversal of flow known as the South Monsoon takes charge as a low replaces the Winter High in eastern Asia and the North Pacific High moves into our ocean area. During the summer, wind strength continues to decline and reaches an annual minimum. Wind directions are most variable in the transition seasons (May and September) between monsoons.

Gales occur infrequently in the seas off the mainland. They are most likely during the winter monsoon and are often associated with extratropical or tropical cyclones. During the winter months gale frequencies of over 10 per cent occur in the waters E of Japan. Extreme winds in the area are associated with typhoons. Highest wind speeds have occurred along the south Taiwan mainland and in the Ryukyu Islands, where gusts in excess of 150 knots have been reported.

Local Winds.—Wind directions and speeds are affected by local topography and land-sea interaction. Land and sea breezes are well-marked along most of this region's coast. This regime is strongest in spring and summer. These breezes are caused by the unequal heating of land and water. When the land is well heated in the forenoon, the sea breeze begins flowing in. It dies down in the evening and during the night is replaced by an offshore breeze. The influence of these breezes is confined to within 20 miles of the coast. During the winter season, particularly along the Sea of Japan coast line, the regime is overcome by the strength of the monsoon. Some sec-

tions of Naikai coastal areas have the land and sea regime throughout the year, although it is most pronounced during the summer.

The foehn wind is a dry, warm, and gusty wind which occurs when an airstream is forced over a mountain range and descends the lee slopes. The air becomes relatively warmer and drier before reaching the shore. Foehn winds occur frequently along the E coast of Korea from Wonsan to Unggi, when a high moves over the peninsula behind a cold front that spawns a cyclonic disturbance over the Sea of Japan. Pressure gradients then cause strong W winds to move down mountain slopes. These winds also occur along the E coast of Japan.

The fall wind occurs when very cold air spills down the mountains and, even though warmed in its descent, remains colder than surrounding air after it has reached the coast.

A local wind, known as "hiroto kaze," occurs just E of Tsuyama, Honshu. It is a strong N wind, with speeds from 35 to more than 60 knots. This wind usually occurs between late evening and noon in late summer and fall. Generally, it occurs when a typhoon is S of Shikoku, but may also occur with the passage of a strong cold front.

In Tsugaru Kaikyo, SE winds are called "yamase." Such winds occur in advance of lows moving E or NE over the Sea of Japan. They are often moderate to strong in the strait and can be accompanied by rain or snow. They arise suddenly. In summer, yamase are usually light, but may persist for a week at a time.

Coastal Winds—Taiwan.—The topography of Taiwan, featuring a ridge of N/S running mountains extending the entire length of the island, causes deviations in the air flow. One of the outstanding winter characteristics is the high frequency of strong winds and gales. For example, at Hengchun there are, on the average, 22 days in December with winds equal to or greater than 19 knots; on 13 of these days winds exceeded 28 knots.

At Taipei, the mean number of days with winds of 19 knots or more range between 10 and 14 from October through April, and 5 to 8 from June through September. However, the most likely time for wind speeds greater than 56 knots is August, September, and October.

In general, gales (winds greater than or equal to 34 knots) occur 5 to 7 per cent of the time along the coasts from October through December and 2 to 3 per cent of the time from January through March. Gales are most prevalent along the NW coast of Taiwan, on Peng-hu Lieh-tao (Pescadores Islands) and on other islands in the Formosa Strait. Strong winds are most likely during the afternoon hours along the northwest coast, but over the islands, they are apt to occur at any hour. May is consistently the most gale-free month.

Coastal winds are mainly monsoonal with the Northeast Monsoon well established from October through March, when N through NE winds average about 12 knots. The monsoon reaches a peak in December and January, when over 85 per cent of the coastal winds are from the Nor NE, at an average speed of 16 knots. April and May are transitional months and by June, the Southwest Monsoon has set in. During June, July, and August, winds are S or SW about 50 per cent of the time, at an average speed of about 7 knots. The Southwest Monsoon is often subordinate to land and sea breezes.

Coastal Winds—Japan (General).—The land-sea breeze regime is well-marked and most noticeable in late spring and summer. In winter, under the influence of the North Monsoon, wind directions vary only slightly from day to night. In summer, during lulls in the South Monsoon, there may be no winds other than land and sea breezes.

Coastal Winds—Japan (Naikai (lnland Sea)).—Winds in these waters are greatly modified by the land, time of day, and season. For example, at Shimonoseki, winds channeled by the neighboring strait are E in the morning and W by late afternoon during the period from February to May. Average wind speeds run 2 to 5 knots in the morning and 6 to 10 knots during the afternoon.

Winds near prominent capes differ widely from those at sea. For example, when a strong northerly wind is blowing in Kii Suido, there may be a light Eor W wind at Shiono Misaki. Osaka offers an excellent example of the harboring effect of topography. In its sheltered position at the E end of the Naikai, gales are unheard of, except in the rare case of a close typhoon passage. Prevalent winds are from the W, year round, illustrating the deflective force of topography. In winter, these W winds may blow strongly for a week or more, bringing in a sea which may make cargo handling difficult. Northwest winter winds crossing Osaka Wan often split into two streams as they reach the SE shore; one blows up the Yodo Gawa, while the other blows SW along the coast toward Kii Suido.

Gales are infrequent in the Naikai. From December through April, most gales are due to passing extratropical lows. Usually, the approach of a storm causes a weakening or reversal of the monsoonal gradient. With the passage of the cold front, the N flow returns and is often intensified. Summer gale frequencies are much less, but winds may reach extremes due to typhoons. Hiroshima, for example, has reported a 60-knot wind, with gusts to 95 knots in October, while Shimonoseki has recorded an E wind of 66 knots with gusts to 86 knots in August. In Murotsu Wan, at the SW approach to Kii Suido, winds are relatively strong throughout the year. In Bungo Suido and Kii Suido, strong N winds often reach gale force during the day in winter. Locally, these winds will follow the coastline rather than the direction of the mid-channel wind.

Coastal Winds—Japan (South Coasts of Japan).—Along the S coasts of Honshu and Shikoku, the land-sea breeze regime prevails, particularly in summer. Most of the Shikoku coast is relatively sheltered in winter and winds tend to be light. On Kyushu, the N and W coasts are exposed to the winter monsoon, but the east coast is sheltered. In Ise Bay, Suruga Bay, and Tokyo Bay, the winter monsoon is N rather than NW, owing to the general N/S trend of the coastline; gales occur mostly in the afternoon. Tokyo and Nagoya are well sheltered and gales are rare. Extreme wind speeds were 72 knots during a September typhoon at Nagoya and 60 knots during a September typhoon at Tokyo. Between the southern Honshu coast and Hachijo Shima, winter gales are frequent since a large number of storms pass through this area.

At well-protected Kochi, Shikoku, average wind speeds range from 4 knots in winter to 2 knots during the summer. Extreme winds have reached 50 knots, with gusts to 78 knots. At more exposed points on Shikoku, like Muroto Zaki, wind speeds are much higher.

On Kyushu, there is a strong diurnal variation in wind, which, while strongest in summer, is noticeable at many locations even in the winter months. For example at Nagasaki, diurnal variation is most noticeable in the winter, when average

morning wind speeds of 6 to 7 knots increase to 10 to 11 knots by afternoon. The port of Sasebo is well sheltered from the onslaught of typhoons; its extreme wind is 42 knots. Nagasaki has an extreme wind of 86 knots, while Kagoshima's extreme is 96 knots.

Chichi Shima is representative of Ogasawara Gunto (Bonis Islands); winds from W and N prevail from December through February. March and April winds are variable, May and June winds are from the SW quadrant, and from July through October E winds prevail. Wind speeds show slight diurnal variation; they average 3 to 6 knots during the morning and 5 to 7 knots during the afternoon. Gales in these islands are infrequent since most storms pass well to the N. However, the region is vulnerable to typhoons.

In the Ryukyu Islands, the winter monsoon blows mainly from the N and NE. Winds are often strong, bringing rough seas and are accompanied by cloudy showery weather, particularly on the island's N coasts. Winter gales are most common with cold front passages and almost always come from a N direction. At Naha, Okinawa, wind speeds of 28 knots or more occur about once a month from August to January. The area's worst weather occurs in Osumi Kaikyo. Lows often pass close to this strait, resulting in sudden large changes in wind direction and speed.

Coastal Winds—Japan—(East Coast of Honshu and Tsugaru Kaikyo).—From Tokyo N, prevailing winds blow offshore and are less strong than those over open waters. At Mikayo, winter winds blow between W and SW throughout the day. The same winds prevail during the spring, summer, and fall mornings and evenings. However, in the middle part of the day, spring and fall winds are variable, while summer winds are mostly from the N. Average wind speeds range from 6 knots in April to 3 knots in July. While winds equal to or above 19 knots occur on about 9 days in March and just 1 day in July.

At Hachinobe, SW to W winds are most frequent throughout the day from November through April. From May through October, SW winds continue to be most frequent during the night and early morning while easterly winds prevail during the day. Winds 19 knots or greater occur on 10 to 11 days per month from December through April, but only on 1 day per month in July and August, on the average.

In Tsugaru Kaikyo, the previously mentioned wind known as the "yamase" is a hazard to navigation. It is a SE wind often reaching gale force. In the summer it is lighter but can persist for a week at a time bringing clouds, rain, and fog.

In Tairadate Kaikyo, at the entrance to Mutsu Wan, the worst winds are squalls from the E and NW winds, which raise heavy seas.

In Mutsu Bay, apart from occasional E winds, May through August are often calm. Periods of sustained high winds are most frequent in November, December and January.

At the port of Aomori, SW winds prevail from October through April. Morning winds are variable from May through August, with N winds prevailing during the afternoon. Winds of 19 knots and above occur on 11 days per month in January and just 1 day per month in August, on the average.

Coastal Winds—Japan (Sea of Japan).—At the port of Akita, average wind speeds range from about 12 knots in January to 7 knots in July. The average number of days with winds of 19 knots or greater, ranges from 11 in January to 1 in July.

Average wind speeds at Sakata, range from 17 knots in January to 7 knots in July, while the average number of days with winds greater than or equal to 19 knots ranges from 26 in January to 3 in August.

From Tappi Saki to Niigata, NW winds and rough seas are a feature from October to March, while summer brings light winds and slight seas. At Niigata, NW winds prevail from December through March, while in April, winds are from the W through the S. Summer brings the land-sea breeze regime. January wind speeds average 12 knots, while the July average drops to 6 knots. Winds greater than or equal to 19 knots occur on an average of 23 days in January and on 2 days in July. May, June and July are the calmest months.

In Fushiki-Toyama Harbor, SW winds prevail from November to March, with NE winds just as prevalent during April and May. The land-sea breeze regime prevails during the summer. Wind speeds average 5 to 6 knots in all seasons.

At Tsuruga, in Wakasa Wan, winds are usually either S or S. For most of the year, S winds prevail, but from about January to March, the N wind takes over and sometimes reaches gale force. Wind speeds reach 19 knots or greater on the average of 6 to 8 days per month from December to March and on just 1 day per month from June to August.

In Miho Wan, NW winds are frequently strong in winter but diminish in April. During the summer, light S winds prevail while E winds are prevalent during the fall. The worst conditions when trying to reach Sakai in Miho Bay are generally encountered from October to April.

Coastal Winds—China (South Coast).—During the winter monsoon, from November through March, prevailing winds from the Gulf of Tonkin to Hong Kong blow from the NE through E.

From Hong Kong to Fu-chou, winds are NE and from Fu-chou to Shanghai, they are from the N through NW. Average wind speeds during the winter, range from 8 to 10 knots, except along the W side of the Formosa Strait, where the average is 15 to 20 knots. Gales along this exposed coast of the Formosa Strait occur up to 15 per cent of the time, while elsewhere along the coast they occur less than 2 per cent of the time, winter or summer.

During the summer monsoon, which generally runs from June through August, prevailing winds S of Hong Kong are S to SE. From Hong Kong to Fu-chou, winds are generally S to SW, while N of Fu-Chou, S to SE winds prevail. These summer winds are often strengthened, weakened, or deflected by the land-sea breeze regime. Wind speeds average about 6-8 knots, except in the vicinity of the Formosa Strait, where 10 to 15 knot averages are common. Here gales occur up to 5 per cent of the time in summer. Gales along the south China coast are usually a result of a strengthening of the winter monsoon, the summer monsoon in the Formosa Strait, the passage of winter cold fronts, and summer tropical cyclones.

At Hong Kong, the prevailing wind in the harbor is ENE from October to December; it becomes more E from January to March. During the summer monsoon, winds are variable, but in the harbor, E winds still tend to be slightly more frequent than S or SW winds. On the S side of the island, however, S and SW winds prevail, but even as far out as Wen-wei chou (Gap Rock), E winds are common during the Southwest Monsoon. Wind speeds increase from dawn to midday, then slacken toward evening. At 0800, the average wind speed at the Royal

Observatory is between 6 and 9 knots; by 1400, it is between 8 and 10 knots. Gales are very rare from December through February, and infrequent at other times. The chance of encountering gales is greatest in July.

At Shanghai, NW and N winds prevail during the winter monsoon from November through March. March and April are transitional months; then winds out of the SE prevail from May through August. September and October are the transitional months. Afternoon winds average 10 to 12 knots, while morning winds average 7 to 8 knots throughout the year. Gales are infrequent.

Coastal Winds—China (North Coast).—North through NW winds averaging about 8 knots prevail in winter, while S winds of 4 to 6 knots prevail in summer. Both directions occur frequently during the spring and autumn transitional periods; wind speeds average about 10 knots in spring and about 7 knots during the fall. Winds of 28 knots or more can occur during any month but are most frequent in winter, when they are observed on 10 days or more per month at exposed coastal locations and over open seas. For example, at Yen-Tai, gales are expected on 10 to 13 days per month from November through April. Extreme wind speeds are most likely in winter and spring along the north China coast, since this area is somewhat sheltered from strong typhoons. Most of the coastal extremes have been about 35 to 45 knots, except at high elevations, where winter winds have been clocked at over 100 knots.

Land and sea breezes are noticeable in summer, particularly in enclosed gulfs like Po Hai (Gulf of Chihli) and along the coasts of Korea Bay. During the afternoon in Korea Bay, the general S flow is strengthened by the onshore sea breeze. At night, the air tends to stagnate, with light offshore breezes from the N and frequent calms. Similar conditions are present along the Liaotung Wan, although here the pressure gradient causes the night winds to blow from the SSE or parallel to the coast, and afternoon winds to blow directly onshore.

Coastal Winds—Korea.—In the Yellow Sea and along the W coast of North Korea and South Korea, the winter monsoon results in a steady NW flow from September through March. During December and January, winds are almost always from the N and NW; long-lasting gales from these directions can be expected.

Over the eastern Yellow Sea, gales are infrequent and occur mostly in fall and winter. The winter monsoon at Inchon is in full swing from October through March, when winds average 7 to 10 knots. Days with winds of 28 knots or more average 1 day in March and less than 1 day per month for the rest of the year. However, at a more exposed location like Paengnyong-do, winds greater than 28 knots can be expected on 5 to 8 days per month during the winter monsoon.

The extreme wind speed recorded at a protected port like Haeju is 47 knots in April and October. Paengnyong-do had extreme winds greater than 47 knots in 9 months, with a high of 63 knots one June. During the summer months, the Southwest Monsoon prevails, with winds from the S through W and wind speeds averaging 6 to 8 knots.

Along the S coast of South Korea and at Cheju Do, the winter monsoon brings a preponderance of N and NW winds from October through March. From April through September, winds are variable and mostly under the influence of the land-sea breeze regime. For example, at the well-sheltered port of Busan, April and May winds are variable, but then in June and July, S through SW winds are common; from August to October, winds are NE or N a great deal of the time.

At land stations, wind speeds vary little throughout the year, and average 6 to 9 knots in the afternoon. In coastal waters, average speeds range from 7 knots in the spring up to 13 knots in mid winter. Wind speeds equal to or greater than 28 knots are most often encountered in January and February, with about 7 days per month, and least frequent in September and October, when the average drops to 1 day or less per month. Gales in coastal waters are most frequent in winter when they occur about 1 per cent of the time.

Along the E coasts of North Korea and South Korea, the winter monsoon brings prevailing winds from the W through N from October through March, while local winds prevail the rest of the year. Wind speeds greater than or equal to 28 knots have been observed from October to April, but the average frequency is less than 1 per cent, even in these months. In N coastal waters, gales can be encountered up to 2 per cent of the time in January. This, however, does not include some local conditions caused by topography. In January, for example, at Changgi-Ap, in Changgi Gap, winds are channeled by the mountains from the W across Yongil Man and reach 28 knots or greater on an average of 11 days that month. Farther N at Kangnung, S through SW winds prevail year round. At Wonsan, early morning winds are SW year round. Afternoon winds swing to the W from November through March and to the W or NE from April through September. Average wind speeds are 4 to 6 knots in the morning and 7 to 9 knots during the afternoon. Gales are infrequent but most likely to occur in either August or December.

From Wonsan to Unggi, foehn winds are common in spring and early summer, when air is warmed and dried as it spills down the mountains to the W. At Songjin, in addition to the foehn winds, strong S or SSE winds known as “songjin” are common during April and May. These winds spring up at about 1100 and last to around 1500. However, gales are infrequent and most likely in winter. At Unggi, winds are predominantly from the n in winter and from the s in summer. These N winds from Unggi Mountain are often strong, but it is the S winds that create a heavy sea in Unggi Harbor.

Climate—Taiwan.—The winter monsoon brings cool moist air from the NE over Taiwan from October through March. The Southwest Monsoon, prevailing during June, July, and August, is composed of warm humid air with a long trajectory over tropical seas. Transitional season weather is a mixture of these two systems.

Typhoons are a threat to Taiwan from May through October. However, May through July is the most favorable period for sailing the Formosa Strait. Seas are calmest, gales are at a minimum, fog is least frequent, and it’s early in the typhoon season. The late summer and fall are handicapped by increased typhoon activity and the winter is least favorable because of high gale frequencies, dense fog along the coasts, and high sea and swell conditions.

However, the S coast of Taiwan is sheltered by mountains from the strong Northeast Monsoon and hence from high seas. Conditions on the S coast are least favorable from July through October, when frequent typhoons to the S generate high sea and swell conditions.

Precipitation—Taiwan.—The greatest amount of precipitation falls during the Southwest Monsoon, except along Taiwan's NE coast, which receives most of its rain during the winter monsoon. The Taiwan coastal regions observe more than 1,775mm annually while the Pescadores and offshore islands receive about 900 to 1,150mm.

Torrential downpour in tropical cyclones have totalled 500mm in 24 hours at some coastal locations, while 250mm in 24 hours has occurred on all coasts.

Snow is not seen along the coasts.

Thunderstorms are rare during the Northeast Monsoon. During the Southwest Monsoon, they occur on 3 to 5 days per month from May to September; maximum activity occurs from June through August.

Cloud Cover—Taiwan.—Mountains and monsoons control cloudiness over Taiwan. On the N and E coasts in winter, cloud cover averages more than 8/10, while the sheltered S coast has an average 5/10 to 6/10 cover and basks in the sun (sky cover less than or equal to 2/10 on 4 to 9 days each month).

When the Southwest Monsoon sets in, cloudiness on the Ecoast diminishes to an average 6/10 and July is the sunniest month. At the same time, cloud cover on the S and W coasts have increased to an average 6/10 to 8/10 ,with only 2 clear days (sky over less than or equal to 2/10) a month.

The offshore islands have an average 7/10 to 8/10 cloud cover from January through May and 6/10 from July through October. There is usually less cloudiness on the lee sides of the islands. Peng-hu Lieh-tao (Pescadores Islands) average more than 7/10 cloud cover during the Northeast Monsoon and about 6/10 during the Southwest Monsoon.

Visibility—Taiwan.—Rain, fog and haze are the main restrictions to visibility. Northern Taiwan experiences dense fog (visibility less than or equal to 5/8 mile) about 5 per cent of the time from January through April; it is even more frequent at daybreak. Otherwise, Taiwan and the Peng-hu Lieh-tao are mostly fog free.

However, the offshore islands experience dense fog frequently during the Northeast Monsoon and spring seasons. From March to May, dense fog is observed on as many as 15 days per month, particularly at daybreak. Visibilities less than 2 miles occur about 2 per cent of the time during the Southwest Monsoon, increasing to 5 per cent around Taiwan and Peng-hu Lieh-tao and to 8 per cent near the offshore islands.

Temperature—Taiwan.—Temperature averages range from about 18.3˚C in February to 27.8˚C in July on the Taiwan coasts. On Peng-hu Lieh-tao and offshore islands, comparable figures are 10.6˚C and 27.8˚C. Freezing temperatures are an extreme as well as temperatures of 37.8˚C.

Climate—Japan.—Since the winter monsoon brings cold air off the Asian continent and the summer monsoon brings warm tropical air from the S, the climate of Japan is more extreme or continental than its island position suggests. This means summers are warm, winters are cold, and snow is common.

Spring is the best season for sailing the waters around Japan. Is is early in the typhoon season, rainfall hasn't reached its early summer or fall peak, gales are rare, and fog, which is uncommon at any time, has not reached its slight summer maximum; at insulated ports like Tokyo and Osaka, fog is more prevalent in late fall and early winter.

Precipitation—Japan.—Rainfall is plentiful and often excessive. There are two rainy seasons; the rainiest is in an early summer, with a secondary rainy season occuring about September. Annual averages range from 1,000mm at protected ports around the Inland Sea to over 4,000mm at some island locations, like Isso, or exposed spots along the SE coasts of Shikoku and Honshu, between Muroto Zaki and Irako. More typical, however, are rainfall averages between 1,000 and 2,300mm.

Seasonal variations depend largely on exposure to monsoon winds. Where there is shelter from the winter monsoon, like at Tokyo and on southern Honshu, a well-marked dry season exists. However, on the exposed W coast of Honshu, winter is as wet as any season. Some of the September rain which makes up the secondary rainy season is contributed by tropical cyclones in the form of torrential downpours. These downpours, which usually occur from July through October, are responsible for maximum 24-hour amounts of generally 300 to 635mm and, in exceptional cases, up to 1,060mm at some small island locations.

Thunderstorms occur on about 10 to 15 days per year with a, late summer and fall maximum at most locations.

Snow is more common than might be expected. It usually begins in early November in northern Honshu, in mid-December along the westernmost part of the W coast of Honshu and exposed coasts of Kyushu, in late December at Tokyo, and in mid-January on southern Kyushu. Snow has been observed as far S as Isso from January through March. The last snow is generally around mid-March in the S and mid-April in the N.

Cloud Cover—Japan.—Cloud cover is influenced by exposure to monsoon winds. It is greatest in winter along the W coast of Honshu and the Ryukyu Islands, while summer is most cloudy along the E coast of Honshu, Shikoku, and Kyushu.

The Inland Sea area has an early summer maximum. From Niigata N, the W coast of Honshu has average winter cloud amounts exceeding 8/10; S of Niigata, including the Ryukyu Islands, the winter average is 7/10 to 8/10. During this same season skies are at their best along the E coast of Honshu and around the Naikai. Along these coasts, cloud cover is usually below 5/10.

During the summer the situation is largely reversed. The E coast of the Honshu-Naikai area has cloud cover of 7/10 or more on the average, while at the same time average cloud cover is 6/10 or less along the W coast of Honshu and the Ryukyu Islands.

Visibility—Japan.—Visibilities around Japan are usually good. From August to April, fog occurs less than 2 per cent of the time over open waters and at exposed locations.

At sheltered ports, particularly industrial locations, fog occurs in the winter. This is usually a radiation fog aided by pollutants and forms on calm clear winter nights. It usually dissipates in late morning; where pollution is great it may persist into the afternoon. At these ports, such as Tokyo, Osaka, and Kobe, fog can be expected on 2 to 5 days per month during the winter.

At the more exposed locations, fog is observed on 1 to 3 days per month from April to July. Visibilities may also be restricted by rain and snow.

Temperature—Japan.—The monsoons are responsible for a large seasonal temperature range along the coasts of Japan.

August if the warmest month and daily maximum temperatures range from 29.4˚C to 32.2˚C, except N of 38˚N, where averages dip to 26.7˚C to 29.4˚C.

Nighttime readings in August range from 21.1˚C to 23.9˚C, except over the Ryukyu Islands, where they are a few degrees warmer.

Extreme high temperatures are just over 37.8˚C at the more sheltered ports and in the 30s (˚C) at exposed coastal sites and on the S islands.

The coldest months are January and February. Average nighttime lows drop into the low single digits below freezing (˚C) N of Sakata and Sendai, gradually rise to near freezing around Tokyo and Kanazawa, climb into the upper single digits above freezing (˚C) in the northern Ryukyu Islands, and reach the upper teens (˚C) in the S portion of the Ryukyu Islands and other islands S of 25˚N. Extreme lows have dropped to -23˚C to -24˚C at N ports, to around -10˚C in the central regions, and only into the mis to upper single digits (˚C) in the S.

Climate—China.—May and June are the most desirable months for navigating waters along the S coast of China, while early autumn is to be favored N of Shanghai. Typhoons are a hazard to the S coast of China in summer and fall, while winter gales and rough seas are a handicap during the Northeast Monsoon along the entire coast of China.

From January through April, periods of light rain or drizzle, low overcast skies, and poor visibilities are a hazard and may persist for several days along the S coast; these conditions are known as “crachin.”

Late spring is unfavorable along the N coast because of strong winds and poor visibilities, while summer offers high temperatures and relative humidities, heavy rains, frequent dense fog, and low visibilities.

Precipitation—China.—Annual precipitation averages range from about 2,500mm in the S, to 1,150mm near Shanghai, to around 500m in the extreme N. Summer is the wet season, when more than one-half of the annual totals are recorded.

Summer precipitation is generally in the form of showers and thunderstorms; continuous rain is observed only when a tropical cyclone is in the vicinity. Extreme 24-hour amounts exceeding 250mm have been observed along the S coast.

Winter is the dry season with monthly amounts of less than 25mm N of Shanghai and less than 50mm to the S. Snow is rare S of Fu-Chou but its frequency increases N.

In the NE most winter precipitation falls as snow; maximum accumulated depths range between about 125 and 375mm. The first snow usually falls beginning in late October or early November and ending around the end of March or early April.

Thunderstorms are common from April through September; the most activity occurs in July and August. At this time, the number of days with thunderstorms range from 1 to 2 days per month at some offshore islands, to 15 to 20 days at some locations along the S coast.

Cloud Cover—China.—South of Shantung Pan-tao, cloud cover is extensive all year round. The average ranges from 5/10 to 8/10, with a slight maximum from January through May and a slight minimum from October through December. North of the Shantung Peninsula, summer tends to be the cloudier season, when averages range from 5/10 to 8/10. In winter, these averages drop to 3/10 to 5/10 and clear days become commonplace.

Visibility—China.—Fog, dust, and rain restrict visibilities along the China coast. Fog is a summer phenomena in Liaotung Wan, Korea Bay, and along the shores of the Yellow Sea. In these regions, visibilities less than 1 mile occur from 5 to 12 per cent of the time in summer. Summer visibilities are excellent elsewhere, except for brief deterioration in showers.

South of Shanghai, dense fog is prevalent in late winter and spring. Dense fog (visibilities less than or equal to 5/8 mile) is observed overall less than 5 per cent of the time, but from 5 to 15 per cent of the time around sunrise. In some spots along the East China Sea coast, dense fog obscures the sunrise about 50 per cent of the time.

Along the Po Hai (Gulf of Chihli) coast, visibilities of less than 1 mile occur about 5 per cent of the time in late winter and spring, and less than 1 per cent of the time during the rest of the year. In the NE, visibilities drop below 1 mile up to 4 per cent of the time during spring and fall and up to 3 per cent of the time in winter. Winter visibilities elsewhere are usually good except for dust.

North of 35˚N, NW winds carry dust from the deserts of Mongolia and North China. The resultant haze is often very thick over coastal waters.

Temperature—China.—January is the coldest month along the entire coast. Mean daily minimum temperatures range from -15˚C to -12.2˚C in the NE, to a warm 15.6˚C on the island of Hainan. Extreme minimums have ranged from about -31.7˚C in the NE to a chilly 7.2˚C on Hainan. July and August are the warmest months and mean daily maximums show less of a spread. They range from the upper 20s (˚C) in the NE to the low 30s (˚C) in the S. Extreme maximum temperatures have come close to or exceeded 37.8˚C along most of the coast.

Climate—Korea.—During the winter monsoon (November-March), cold dry air flows down from the Asian continent to the Pacific Ocean, resulting in cool temperatures and nearly cloudless skies over Korea. The summer monsoon (June-August) brings warm moist air from the sea, resulting in hot, humid, and rainy conditions. Variations in these conditions are caused by topography, exposure, and the effects of adjacent wind and cold ocean currents.

While weather hazards to navigation are present in all seasons, early spring is the least hazardous. Seas are becoming calmer as they near their summer lull, typhoons are rare, gales are infrequent, and fog and rain have not reached their summer peak. Most tropical cyclones that strike Korea are losing strength due to the cool waters and mountainous terrain of surrounding lands.

Precipitation—Korea.—Summer brings the plum rains to Korea as weak lows and fronts move through the area bringing widespread cloudiness, heavy rains, and thunderstorm activity. Tropical cyclones also contribute to this summer peak. Annual rainfall averages range from 760 to 1,520mm along the entire coast, and on Cheju Do. Variations are more dependent on exposure than latitude. More than one-half of the annual amount falls during July, August, and September. Since rain often falls as heavy showers, the number of rainy summer days is less than normally expected and averages 4 to 6 days per month.

The greatest 24-hour rainfall amounts occur in July, August, or September and are usually associated with a tropical cyclone. These amounts range from 175 to 350mm. Thunderstorms can be expected on 1 to 3 days per month from May through October, with July and August the most likely months.

Snow falls from mid December through early March on Cheju Do. In January, snow is observed on up to 9 days per month, even in the S, and maximum snow depths range from 75 to 300mm. Both of these criteria depend on exposure. In N coastal waters, snow is observed up to 15 per cent of the time in winter.

Precipitation frequencies over coastal waters are highest in winter, particularly in the S, where precipitation is observed up to 50 per cent of the time. In summer, frequencies drop to 15 per cent along the NE coast and 25 per cent in S waters.

Cloud Cover—Korea.—The summer monsoon brings cloudy skies to the entire coast, with an average July cloud cover of more than 7/10. This average is generally greater than 6/10 from about May to October.

Winter skies are clearest and cloud cover averages drop to around 3/10 to 4/10 during this season. Along the S and E coastal areas, this minimum may occur during late fall and early winter.

In general, overcast conditions (sky cover greater than or equal to 6/8) are observed on 100 to 150 days a year, with many in the summer, while clear days (sky cover less than or equal to 2/8) are seen on about 90 to 100 days annually, with a winter maximum.

Visibility—Korea.—Visibilities along the Korean coasts are generally good. Poor visibilities are most likely in early summer, when rain and fog are prevalent. Sea fog forms over parts of the Sea of Japan and Yellow Sea from late March through August, and most often in June and July. If surface winds are onshore this fog may move inland.

Visibilities are lowest around sunrise and best in the afternoon. Early morning summer fog occurs 30 to 50 per cent of the time along the w coast of Korea and 10 to 20 per cent of the time along the S and E coasts. By mid-afternoon, the fog has usually dissipated along the coasts, except at an exposed location like Paengnyong-do.

Smoke and haze reduce winter visibilities when a cold stagnant air mass lies over a large industrial area. Snow and rain also help to reduce wintertime visibilities. However, visibilities are best in fall and early winter.

Temperature—Korea.—August is the hottest month; mean daily maximum temperatures range from 26.7˚C to 29.4˚C while extremes of 37.8˚C are common. Mid-summer minimums are usually in the mid low to med-20s (˚C). Spring and fall daytime temperatures average in the upper teens (˚C), with nighttime lows in thelow to mid signle digits (˚C). January is the coldest month, with nighttime lows averaging near -3.8˚C over most of the coast; this dips to -6.7˚C in N and jumps to around 1.7˚C on Cheju Do. Extreme minimums have dropped below 0˚F at all but S locations. Average air temperatures over coastal waters range from 24.4˚C to 25.6˚C in August to 2.8˚C to 4.4˚C in January.

SOUTHEAST ASIA

General.—Southeast Asia has a tropical monsoon climate featuring considerable cloudiness, rain, uniformity of temperature, and high relative humidity. Semi-permanent pressure systems over the Pacific Ocean and the Indian Oceansand over the Asian and Australian continents regulate persistent wind systems known as monsoons, which dominate the climate of the area. Changes in the weather result mainly from the convergence of these systems. The surrounding warm tropical waters modify invading air masses, and topographic features cause striking climatic differences between islands and even on the same island.

In this area there are no seasons similar to those of the mid-latitudes. Instead, seasonal weather changes are determined by the two great opposing monsoons which converge along the Intertropical Convergence Zone (ITCZ). The ITCZ migrates N and S, with the sun heralding the change from one monsoon to another. From December through March, when the ITCZ lies farthest S, air from the Northern Hemisphere flows steadily over the area most of the time. In various locations this flow bears different names according to its direction, but it is commonly known as the Northeast Monsoon.

During April of an average year, the ITCZ moves N across the area, with the Northeast Monsoon and Southwest Monsoon prevailing over various regions during this transitional period. During May through October, the ITCZ usually lies N of the area and air from the Southern Hemisphere predominates; this is known as the Southwest Monsoon. The other transitional period occurs in November, when the ITCZ moves S across the region. In some localities, this passage may occur as late as December or as early as October.

The transition from one monsoonal flow to another at any locality is not usually a quick definite process, but involves weak changeable winds interspersed with stretches of both the retreating and advancing monsoons. The seasons are based on average conditions, but in any given year variations in the strength of the monsoonal flows can hasten or retard the occurrence of any season. With the possible exception of orographic uplifting and the afternoon convective process, convergence zones are probably the most important source of widespread cloudiness and precipitation in the area.

The ITCZ is defined as the line of discontinuity in the wind field between the air flow from the two hemispheres. As these air streams converge in the equatorial low pressure area, an intensification of convective cloud masses occurs along a band which is usually discontinuous. This convergence is well marked when the two air streams directly oppose each other, and is ill defined when the two streams are more or less parallel.

The weather over most of the area changes with seasonal advances and retreats of the ITCZ across the area. In April, the ITCZ is characterized by sudden advances and retreats; weather along this zone is often violent. Occasional intensifying atmospheric wave phenomena, traveling W along the N edge of this zone, are accompanied by thunderstorms or line squalls that contribute to the violent weather.

From May through October, when the Southwest Monsoon prevails, the area enjoys a minimum amount of cloudiness and rainfall. The S retreat of the ITCZ in November usually takes place in a shorter time than the N advance. The sudden violent weather returns with this retreat. The increased frequency of thunderstorms, heavy rainfall, and widespread cloudiness continues during the subsequent months of the Northeast Monsoon, with the renewal of wave-like deformations moving W along the N edge of the ITCZ.

The most spectacular and troublesome weather in the area results from the intensification of a phenomenon known as the “easterly wave.” These waves form along the ITCZ, from November through April in the Southern Hemisphere and from May through October in the Northern Hemisphere. In the N,

these tropical systems sometimes intensify into typhoons (winds of 64 knots or greater). Typhoons can occur during any month, but are more likely during the months that theITCZ is in the Northern Hemisphere.

Tropical Cyclones.—These revolving storms, with a counterclockwise circulation in the Northern Hemisphere and a clockwise circulation in the Southern Hemisphere, are the most dangerous navigational weather hazard in this region. Circulations vary from 60 to 600 miles in diameter. Winds around the eye or center can climb to 130 knots or more. Waves of 12m and higher have been generated by tropical cyclones. Torrential rains of up to 1,200mm fell in one day at Baguio in the Philippines.

Tropical cyclones are more frequent and more intense in the Western North Pacific Ocean, where they are called typhoons when winds reach 64 knots and supertyphoons when the winds climb to 130 knots. In the Philippines, they are sometimes called baguios. The Southwest Pacific and Australian area refer to these storms as cyclones; however, in the low latitudes of this area the systems usually remain at tropical depression strength (less than 34 knots) or tropical storm strength (34 to 63 knots). A severe tropical cyclone originating in the Timor Sea area and moving S across the interior of northwestern Australia is called a willy-willy.

While no area is immune to the fury of tropical cyclones, they are rare in the latitudes from 5˚S to 5˚N.

In the Northern Hemisphere, tropical cyclones can form in any month, but they are most likely from May through December. They are most apt to reach typhoon strength from July through November. The area of maximum tropical cyclone frequency tends to move N during the summer and then retreat after August, so the frequency for any region varies with the month.

Tropical cyclones form from about 5˚N to 20˚N, but favor the Caroline Islands region and the N part of the Philippine Sea. Some tropical cyclones develop over the South China Sea. The waters around northern Luzon and southern Taiwan are among the most active tropical cyclone regions in the world. There is a 65 to 75 per cent chance of a tropical storm, tropical cyclone, or typhoon in these waters from July through September. In September, this activity extends all the way to the coast of Vietnam. The waters on either side of the central Philippines (10˚N to 15˚N) become most active in October, November, and December.

After formation, tropical cyclones often move on a W or WNW course. If they reach 15˚N, they have a tendency to recurve toward the NE and bypass the Philippines and perhaps Japan. This is particularly true during the heart of the season. Many storms continue W across the Philippines and into the South China Sea. In these waters, the most common direction of movement is W through N, particularly WNW. South China Sea storms usually dissipate over Vietnam or the south China coast.

Early and late in the season and during the off season, tropical cyclones are more likely to remain in the lower latitudes. East waves also intensify to mature tropical cyclones in the Southern Hemisphere. The formative stages, known as tropical depressions and tropical storms (winds less than 64 knots), occasionally pass N of Halmahera on a W or NW track across the Celebes Sea and also S of Kepulauan Tanimbar and Timor on a W or SW track across the Arafura Sea and the Timor Sea. These tropical systems occur most frequently in November and December in the N and in March and April in the S.

Because almost all tropical cyclones that affect the Southern Hemisphere portion of the area are in their formative stages, destructive surface winds are seldom experienced, but thick clouds, heavy rainfall, and high seas usually accompany their passage.

Thunderstorms.—The S part of this area has one of the highest frequencies of thunderstorms in the world. However, the distribution of thunderstorms varies greatly within this region. Average frequencies range from as few as 12 a year at Sanana to as many as 322 annually at some mountain locations in Jawa (Java). Although they can occur throughout the year, maximum activity usually occurs during the transition periods. Thunderstorms are spawned by convergence zones, orographic uplifting, afternoon heating over land, and nighttime cooling over water. Where the sea breeze opposes the monsoon, thunderstorms frequently drift out to sea with the prevailing wind after the sea breeze subsides.

Thunderstorms occur most frequently in the afternoon or early evening over land and at night over water, but at coastal locations a secondary maximum can occur during the latter part of the night or early morning when the monsoon is onshore. In the tropics the thunderstorms tower to great heights, sometimes over 15 km. Surface wind gusts in severe thunderstorms may reach 50 knots. Rainfall is torrential at times.

Waterspouts.—Waterspouts are associated with large cumulus and cumulonimbus clouds and severe thunderstorm activity. They build downward from cloud to water. While most waterspouts are relatively mild, they can build to tornado proportions. The frequency of waterspouts gradually increases from 5 per 10,000 ship observations in the NW part of this area to 10 per 10,000 ship observations in the SW part of this area.

Extratropical Cyclones.—Extratropical storms and their associated frontal systems affect only the most N waters of the area, principally from November through May. Mountain barriers shelter the region from most of these storms. Some weak cyclones do manage to move off mainland China and intensify over water. They disrupt the monsoonal flow, causing cloudiness and rain.

Philippines

General.—The Philippines have a tropical maritime climate characterized by high temperatures, high relative humidities, and a substantial amount of rainfall. Surface winds are usually light, and relief from the sultry conditions is found infrequently in the afternoon sea breeze along the coast. In addition to the monsoons and trade winds, the climate is influenced by tropical cyclones, rugged topography, the tropical latitude, and the surrounding warm ocean waters.

Winds.—While the monsoons blow steadily over the open sea, topographic influences result in variations of coastal winds. The onset of the Northeast Monsoon varies from year to year. but it usually begins over northern Luzon early in October; by November N through E winds prevail over the entire Philippines.

At its height, the Northeast Monsoon blows with remarkable steadiness and over the northern Philippines attains considerable strength. Over the open seas off Luzon it blows at an average of 20 knots, frequently freshens to 25 knots, and occasionally reaches gale force. In these N waters, NE winds blow

40 to 60 per cent of the time from October through March, with E and NE winds as secondary winds. In the central and southern Philippines, NE winds blow 25 to 50 per cent of the time from about November through April. Winds from the E and N are also frequent, with E winds becoming particularly prevalent late in the season. Wind speeds average 8 to 12 knots, with gales occurring less than 2 per cent of the time.

Gales are most likely from October through December, when the ITCZ and tropical cyclones are most active in this region. The transition to the Southwest Monsoon is less abrupt than the one to the Northeast Monsoon. It begins in April and May and is noticeable as winds become lighter and more variable. During these months winds blow mainly from the E semicircle. By June, S through SW winds prevail throughout the coastal waters of the Philippines. The frequency of these winds ranges from 40 to 50 per cent. Southeast winds and W winds are also frequent during the Southwest Monsoon, which is less steady than its NEn counterpart. This weakness is also reflected in the wind speeds, which average 8 to 12 knots in the N and 6 to 9 knots in the S.

Gales are rare and winds of 22 knots or more occur less than 12per cent of the time in the N and less than 5 per cent of the time in the S. The Southwest Monsoon lasts through September. Land and sea breezes are most noticeable during the transitional seasons or at times when the monsoons are weak. They are most pronounced on coasts sheltered from the monsoon, like the N coast of Luzon during the Southwest Monsoon and the W coast of Luzon during the Northeast Monsoon. For example, in Manila, morning E winds in April blow about 25 per cent of the time, at an average of 7 knots. During the afternoon, SE winds prevail 34 per cent of the time, blowing at an average of 15 knots. During periods when the monsoon is weak, the land and sea breeze may be prominent, even on the more exposed coasts. At points where the mountains are near the coasts, as in southern Luzon, the land breezes are often squally.

Extreme wind speeds in the Philippines are rare and usually the result of typhoons. The N islands are more susceptible, but none are exempt. Winds near the center of mature typhoons can climb to 200 knots. Usually they diminish somewhat as the storms approach the islands. Actual recorded wind gusts in the 100-knot range are common for extremes. The average 100-year return value for an extreme wind at Manila is 128 knots. Winds of gale force can be generated by tropical cyclones directly, by distant typhoons strengthening the monsoonal circulation, or by local thunderstorms.

Tropical Cyclones.—Tropical cyclones can exert a tremendous effect on the weather in the Philippines in one year and have just a small influence the next year. However, N of Mindanao, there is a 90 to 100 per cent chance that at least one tropical storm or typhoon will affect the islands in any given year. This probability drops to 35 to 70 per cent to the S.

Typhoons or “baguios” can carry winds up to 200 knots. The term “baguio” was derived from the once world record 1.2m 24-hour rainfall that occurred in the city of Baguio on Luzon during the passage of a tropical cyclone in 1911. The world’s lowest sea level pressure of 876mb was recorded in a typhoon E of the Philippines between Yap and Guam in 1975. A wind of 139 knots was recorded at Casiguran on November 17, 1959, during Typhoon Freda. July through November is the heart of the typhoon season in the Philippines, while August and September stand out as the months with the maximum frequencies.

Of the ports in the Philippines, Subic Bay and Manila have been studied as possible typhoon havens. While it is true that many ships have weathered the numerous typhoons that have affected Subic Bay, it is also true that this port has never really been affected by a severe typhoon. Those storms whose eyes have crossed directly over Subic Bay have been relatively weak storms. The highest sustained wind on record is 56 knots. It is felt that the potentially dangerous situation is not presented by a storm passing directly over Subic Bay, but rather by one passing 15 to 50 miles to the SSW.

The study concludes that while Subic Bay does provide some degree of shelter from typhoons, it should not be considered an “unqualified typhoon haven.” However, the sheltering effect provided by the surrounding terrain qualifies Subic Bay as a much safer port in heavy weather than Hong Kong. Large ships would find the small confines of the bay restrictive. Evasion routes are short and direct. If ample warning time is not given, or the means to evade do not exist, relatively safe typhoon anchorages are present in the inner basin of Port Olongapo for a limited number of small vessels. Also, anchorages close to the W shore of the bay provide some degree of shelter. The study also concludes that Manila Harbor is not a safe harbor and Manila Bay is not a safe refuge during the passage of a typhoon.

The policy of the Port Captain of South Harbor, Manila, is to evacuate all vessels at least 24 hours prior to typhoon passage. The harbor is busy and congested. Merchant ships that moor in Manila Bay outside of the confines of South Harbor are often ill-equipped and are in danger of breaking anchor during a storm. It is recommended; therefore, to evacuate from the bay as well as from the harbor. The evasion route into the South China Sea is short and direct

Temperature.—Temperatures are the most homogeneous climatic element. The temperatures of any day are very much like those of the day before or even those of 6 months earlier. Temperatures show little variation latitudinally. The most variation is with altitude. Throughout the year, at most locations, mean daily maximums range from the high 20s to the mid-30s (˚C). However, at a few localities on Luzon they climb into the upper thirties. Most of the mean maximums above 32˚C occur from April through September.

In general, cloudiness and rain keep temperatures from soaring any higher. Extreme maximums exceeding 38˚C are uncommon in the Philippines. Extremes of this nature are most likely on Luzon in April, May, and June. Mean daily minimums range between 18˚C and 24˚C throughout the year. Mean minimums below 21˚C are observed only on the N islands and in December through March. Few places in the lowlands have recorded extreme minimum temperatures below 13˚C and at most locations they range in the upper teens and low 20s (˚C).

Precipitation.—For those living in the Philippines, conversations regarding the weather generally center on rainfall. It is by far the most variable climatic factor. Rainfall is largely controlled by the prevailing winds and the topography of the islands. In general, those with an e exposure normally receive maximum rainfall shortly before and during the northeast monsoon and trade wind seasons. These locations include the e coasts of Luzon, Catanduanes, Samar, Leyte, and Mindanao. A

number of places on these coasts have an average rainfall in excess of 500mm in lor more months.

The western Philippines have their maximum rainfall during the Southwest Monsoon. However, the months of maximum rainfall vary considerably. Some locations record a maximum in May, June, or July and others in October or November. Most localities along the W coast of Luzon have a mean rainfall of more than 630mm in July or August.

South of 12˚N, mean rainfall is usually much less than 630mm during these 2 months. Some places in the western Philippines have such an uneven distribution that they have a wet season and a dry season. At these locations, several of the driest months average less than 10mm of monthly rainfall, while each of the wettest months average over500mm. Much of western Luzon, the Calamian Group, and other locations average at least 10 times as much rainfall in their wettest month as they do in their driest. Like other countries the Philippines experience extremes in annual, monthly, and daily precipitation amounts. Exceptionally large amounts of rainfall are usually the result of tropical cyclones, particularly short-period amounts. The number of rainy days each year is less variable than the rainfall amount.

North of about 13˚N, the W coast rainfall amounts are greater during the Southwest Monsoon than E coast amounts are during the Northeast Monsoon and trade wind seasons. This is a result of the forcefulness of the moist SW flow and is particularly true at higher elevations.

Thunderstorms are frequent throughout the Philippines. They occur mostly from April through October with frequencies ranging from five to 20 thunderstorms per month. During the rest of the year, they are infrequent.

Humidity.—High relative humidity plagues the Philippines year round. Diurnal variations are much more pronounced than seasonal changes. In general, humidities range from 60 to 80 per cent in the afternoons and 85 to 95 per cent in the mornings. The combination of high temperatures and relative humidities is very enervating, especially to those unaccustomed to these conditions.

Cloud Cover.—Cloudiness is fairly extensive in the Philippines. Mean cloudiness usually ranges from 50 to 85 per cent during the Northeast Monsoon and trade wind seasons, to 60 to 95 per cent during the Southwest Monsoon. The primary exceptions are near the West coast of Luzon during the Northeast Monsoon, when mean cloudiness decreases to 25 to 50 per cent.

While mean cloudiness does not vary significantly from region to region, the mountainous terrain does cause significant seasonal variation, depending upon the exposure to the prevailing flow. Cloudy days are prevalent over most of the islands, with occurrences of more than 20 days per month at some locations. However, near the W coast of Luzon, these figures drop off to 5 days or less during some months of the Northeast Monsoon.

Clear skies are most infrequent during the Southwest Monsoon, when they occur on less than 5 days per month at most locations. Altbough many places have as few days of clear skies during the Northeast Monsoon, a few areas, mainly in western Luzon, experience clear conditions up to 15 days in some months.

Visibility.—Restrictions to visibilities are most often caused by rain. Although, visibilities drop below 2 miles in some months, they seldom drop below 0.5 mile, and if they do, it is only briefly in a heavy downpour.

In the near shore waters along the E coasts, visibilities fall below 2 miles up to 8 per cent of the time during the Northeast Monsoon. They drop to 0.5 mile around 1 per cent or less.

Poor visibilities in the W coincide more with the Southwest Monsoon but are even less frequent.

China, Vietnam, and the Gulf of Thailand

General.—This region has a monsoon climate with distinct wet and dry seasons. In general, the Southwest Monsoon, from mid-May through September, brings hot, humid, and cloudy weather, with frequent heavy showers or thunderstorms and relatively good visibilities. The Northeast Monsoon, from November through March, is responsible for cooler, clearer, and less humid weather with poorer visibilities. In the northern South China Sea, tropical storms occasionally bring rain and wind from November through May.

Winds.—The Northeast Monsoon arrives over the N waters of the South China Sea abruptly in September. Its influence spreads slowly S and by November, the entire area has been invaded. It is most persistent and intense E of Hai-Nan Too, where NE and E winds or N winds blow 70 per cent to more than 80 per cent of the time from October through March. Average wind speeds range from 12 to 20 knots; gales blow up to 9 per cent of the time in the southern entrance to the Formosa Strait.

In the Gulf of Tonkin and along the coast of Vieblam, the monsoon sets in during October. Winds blow from N through E 60 to 70 per cent of the time. The winds last until March except in the more sheltered Gulf of Tonkin, where they only last through February and blow at average speeds of 10 to 12 knots; gales occur less than 1 per cent of the time.

Farther S along the more exposed coast of Vietnam, mean speeds range from 12 to 17 knots, with gales blowing up to 4 per cent of the time. Another sheltered sea is the Gulf of Thailand, where the monsoon sets in during November. Here it lasts only through January. During this period, winds of 8 to 12 knots blow out of the N through Eabout 60 per cent of the time. By March, winds with a S component are on the rise. This is not true to the S along the Malaysian coast, where winds out of the N and NE or the NE and E blow 70 to 85 per cent of the time from November through March. Average wind speeds range from 6 to 12 knots.

Gales are rare both in the Gulf of Thailand and to the S. March and April are the transitional months and by May, the Southwest Monsoon is well established over much of the area. This monsoon is usually weaker and less persistent than its counterpart. Wind speed averages range from about 5 to 13 knots. In general, they increase with latitude and are strongest after June. Gales occur about 1 per cent of the time or less and are associated either with a thunderstorm or tropical cyclone.

The Southwest Monsoon is most persistent along the E coast of Malaysia, where SW through SWt winds blow up to 80 per cent of the time from May through September.

In the Gulf of Thailand, W winds are more frequent than SE winds. Along the Vietnam coast, SW and W winds prevail in the S, while SW through SW winds are more likely in the N, including the Gulf of Tonkin, where they blow up to 70 per cent of the time. Along the China coast, the monsoon arrives in

June and remains only through August, when S through SWwinds blow 40 to 55 per cent of the time.

Local winds and a land-sea breeze effect play a part in the wind system. Land and sea breezes are well marked along most coastal sections. Although they occur throughout the year, these breezes are generally most pronounced during the Southwest Monsoon and weakest during the Northeast Monsoon. The sea breeze usually begins about mid-morning, blowing from sea to land, and subsides around sunset. The land breeze, which occurs during the night, is usually the weaker of the two.

Where mountains lie near the coast, two types of local winds are likely. One is the foehn wind, which is a dry, warm, and gusty wind that occurs periodically when an air stream is forced over a mountain range and rapidly descends the lee slopes. These winds are most pronounced along the E coast of Vietnam and in southwestern Cambodia during the Southwest Monsoon; along the E coast they are known as Winds of Laos. They originate in the highlands of Chaine Annamitique and blow down the W slopes to the coastal lowlands, usually between Ha Tinh and Nha Trang. These are hot, dry, and occasionally strong winds. The other wind effect comes from an increase in speed caused by a channeling of air through narrow mountain passes and canyons. Recorded extreme wind speeds can be misleading, as they do not usually represent the actual extreme that may have occurred a short distance from the recorder.

In general, recorded extremes throughout the area range from 30 to 70 knots; most occur during the tropical cyclone season or, in some cases, at the peak of the Northeast Monsoon. Tropical cyclones in this area can generate wind speeds of up to 175 knots.

Tropical Cyclones.—While tropical cyclones can occur in any month in the South China Sea, they are most likely from June through December; an average of nine tropical storms or typhoons affect the South China Sea each year .Most of these, about 80 per cent, originate over the Pacific Ocean E of the Philippines and move W through the South China Sea. The remainder form over the sea itself. From January through May most tropical cyclones recurve N before reaching this area. Occasionally a weak storm will make its way through the South China Sea and bring 1 or 2 days of rain along one of the coasts.

From June through September, many tropical storms and typhoons tend to cross the N part of the South China Sea, with many recurving into southern China; some move W into Vietnam. Later in the year, the S half of the South China Sea is more active. October is the month when all coasts are most vulnerable, with some storms crossing into northern Vietnam or southern China and many more moving across southern Vietnam and sometimes reaching Thailand before dissipating. Occasionally, a tropical cyclone will form in the Gulf of Thailand and move NW across the Thailand peninsula.

During November and December, the less frequent tropical cyclone activity is mostly confined to the S part of the area. During these months, storms are generally weaker than in previous months and their courses are more erratic. While winds from typhoons are often severe, reaching 130 knots or more, they cause less damage than the flooding, abnormally high tides, and heavy seas. Typhoon moorings may be available.

It was concluded that Kao-hsiung harbor is not to be considered a haven during typhoon conditions. The key factor was not the weather conditions, but the threat posed by other ships in the confined harbor .Kao-hsiung is under a real typhoon threat from J une through October, when an average of four tropical cyclones pass within 180 miles of the port each season. About one out of every three of these storms generate winds of 34 knots or more at Kao-hsiung. The confined nature of the harbor and the difficulty experienced in maneuvering in strong winds through the narrow entrances makes it plausible to be prepared to get underway when a storm center approaches within 400 miles.

The Hong Kong study also came to the conclusion that it was not a safe haven during a typhoon. Statistics indicate that five or six tropical cyclones threaten Hong Kong each year .On the average, one comes close enough to cause gale force winds and once every 10 years a fully-developed typhoon brings winds of 64 knots or more. Any tropical cyclone passing within 25 miles to the E and 50 miles to the W of Hong Kong will have a serious effect on all areas of the harbor. Storm surges of 0.5 to 2m have occurred in the past, running over sea walls and piers. Within the harbor, the sea becomes very confused with short steep waves.

The decision to evade must be taken early in order to gain maneuvering room in the open ocean. Within 24 hours of a tropical cyclone crossing the Philippines, swells can be generated that severely hamper a ship's speed of advance, even though the storm may still be a great distance from Hong Kong.

Temperature.—Over peninsular Thailand and along the shores of the Gulf of Thailand, high temperatures occur throughout the year. Mean daily maximums are usually 29˚C or above even during the Northeast Monsoon. March through May are the hottest months, when temperatures reach 32˚C or above on 20 to 30 days each month. Extremes have reached 38˚C or more at most locations. Mean daily minimums remain in the upper teens to low 20s (˚C) all year round.

Along the coast of Vietnam and southern China, during the Northeast Monsoon, there is a decrease in temperatures with increasing latitude. During the Southwest Monsoon there is little variation. June, July, and August are the hottest months, when mean daily maximums range from the mid-20s (˚C) to low 30s (˚C), with nighttime lows mostly in the low 20s (˚C).

Extreme maximums of 40˚C or more are common throughout the region. During this warm season maximum temperatures reach 32˚C or more on 10 to 20 days per month along the southern China coast and 18 to 28 days per month on the E coast of Vietnam.

December through February are the coolest months, with average daytime highs ranging from the mid to upper teens (˚C) along the SE coast of China to the mid-20s (˚C) around Nha Trang. Nighttime lows range from around l0˚C to the low 20s (˚C). Extreme low temperatures range from freezing at Hong Kong (high elevation) to around 15˚C in the south.

Precipitation.—Annual rainfall amounts range from about 760mm around Hoa Da to nearly 3,800mm along the Cambodian coast. The rainy season generally runs from May through October except over peninsular Thailand and along the Vietnam coast between Vinh and Hoa Da, where it is heaviest from September through December. Along the Cambodian

coast monthly amounts during the rainy season range from 500 to 760mm on 15 to more than 25 days.

Elsewhere along the shores of the Gulf of Thailand and along the peninsula, rainy season monthly amounts range from 100 to 600mm on 10 to 20 days. During the rainy period along the east coast of Vietnam, monthly amounts range from 100 to 600mm, depending upon topography and exposure to the Northeast Monsoon. From Hue N to Ky Anh is the wettest section of coast; rain falls 15 to 20 days per month during the September through December. Along the S coast of China,100 to 400mm of rain falls 10 to 20 days per month from May through September. December and January are usually the driest months except over peninsular Thailand and along the east coast of Vietnam, where a dry period occurs from January through April.

Torrential downpours are usually the result of tropical cyclone or thunderstorm activity. Maximum 24-hour amounts of 200 to 500mm have been recorded along the S coast of China and E coast of Vietnam. In the Gulf of Thailand and along the peninsula, these amounts are in the 100 to 300mm range.

Thunderstorms occur frequently over this area. They are most frequent along the shores of the Gulf of Thailand and least frequent along the E coast of Vietnam, between Qui Nhon and Nha Trang. Seasonally, thunderstorm activity is at a minimum from December through February, when they occur less than 2 days per month, except in the Gulf of Thailand where they occur on up to 8 days per month. During March thunderstorm activity increases, particularly along the Cambodian coast and in peninsular Thailand, where up to 18 thunderstorm days occur. In general, thunderstorm activity reaches a peak in May, with 10 to 25 thunderstorm days. This peak occurs in July and August in northern Vietnam and in April over the peninsula.

Along the S coast of China, thunderstorm activity increases in March and lasts through September. The greatest activity, up to 20 days per month, occurs in the mountains of Hai-nan Tao and in a small coastal section around Han-Chiang (Fort Bayard). Other than this, thunderstorms are less frequent along the coast.

Humidity.—In general, early morning relative humidities are quite high throughout the year. Mean values range from 75 to 95 per cent.

Seasonal variations are insignificant, except along the E coast of Vietnam, where they are lower during the Southwest Monsoon, and the S coast of China, during the Northeast Monsoon. Afternoon humidities are appreciably lower, with seasonal and regional variations noticeable.

The Northeast Monsoon brings low afternoon relative humidities to the shores of the Gulf of Thailand and the coast of southern China, but high afternoon relative humidities to the east coast of Vietnam. The Southwest Monsoon brings high afternoon relative humidities to the Gulf of Thailand and southern China and low readings to Vietnam's E coast.

Seasonal variations are not as well defined along the Gulf of Tonkin shores and over the Thailand peninsula. Along the Ecoast of peninsular Thailand and the shores of the Gulf of Thailand, the Northeast Monsoon brings the least cloudiness. Minimum amounts usually occur from December through March. Along the N shores of the gulf, on up to 15 days per month there are clear skies (cloud cover less than 2/8), but elsewhere monthly means are less than 5 days.

Cloud Cover.—Cloudy days (sky cover greater than 6/8) range from 4 to 8 days per month in the N and up to 20 days along the peninsula during this period of minimum cloudiness. The Southwest Monsoon brings a sharp increase in cloudiness, with August and September being the cloudiest. The number of days per month with cloudy skies averages 20 to 30 everywhere, while clear skies are seen on an average of 1 day at the most each month.

From southern China to the Mekong Delta, clouds are abundant throughout the year. In the S, minimum cloudiness occurs in March through May, when clear skies occur up to 10 days per month. In the N, minimum cloudiness occurs in October to December. At this time, clear skies are seen on 6 to 9 days per month, with cloudy skies occurring 8 to 15 days per month. Maximum cloudiness occurs during the Northeast Monsoon over the entire area.

South of Hue, November through January is the cloudiest period, while to the N, it occurs in February and March, except along the south China coast, where it occurs in May and June. During these peak periods, skies are cloudy on 20 to 25 days per month and clear on less than 3 days.

Visibility.—The worst visibilities generally occur in the early morning during the northeast monsoon and the spring transition. Smoke, haze, and fog occur throughout the year, although the heavy frequent rains of the Southwest Monsoon tend to clear the air of smoke and haze. Visibilities vary with local conditions.

The term "crachin" is used to describe prolonged periods of fog, low cloudiness, and drizzle or light rain which affect the E coast of Vietnam N of Nha Trang and southern China from October through May. These systems are most frequent in March and most pronounced N of Quang Tri and in the Red River Delta. Crachin weather generally occurs in recurring periods of 2 to 5 days each, but can last as long as 20 days or more. In most cases visibilities are quickly reduced by fog to less than 2 miles and frequently below 0.5 mile.

Visibilities below 2.5 miles occur about 5 to 15 per cent of the time on the W shores of the Gulf of Thailand during the Northeast Monsoon and less than 10% during the Southwest Monsoon. Percentages along the NE shore are usually always less than 10 per cent, with the Southwest Monsoon bringing a slight increase in poor visibilities. An exception is Khlong Yai, where visibilities fall below 2.5 miles from 10 to 20 per cent of the time except in April, November, and December.

Along the east coast of Vietnam and the south coast of China, the frequencies of visibilities less than 2.5 miles are highest from September through April, when they occur 5 to 15 per cent of the time on the average. They are most frequent along the S coast of China in February and March.

Indonesia and Northern Malaysia

General.—This region has a tropical monsoon climate with considerable cloudiness and precipitation, uniform temperatures, and high humidities. The climate is influenced primarily by the Intertropical Convergence Zone (ITCZ) which migrates N and S across the area during the transitional periods.

Winds.—While the monsoon reversal begins during late September and October, it is not until December that the Northeast Monsoon is ftrmly entrenched across this region. As these trade winds approach the Equator, they are deflected and begin to back to the N and W They are often known in this

region as the Northwest Monsoon. The steep terrain of New Guinea acts as a barrier which accentuates the curvature of the trans-Equatorial flow. This wind system remains entrenched through March. Wind speeds are generally in the 6 to 10 knots range. Gales are rare and speeds of 22 knots or more blow less than 5 per cent of the time.

Along the SE coast of Malaysia, in the Strait of Malacca, and off the NW coast of Borneo, winds are out of the NW through NE about 65 to 90 per cent of the time from December through March. In this region, wind speeds are slightly higher than they are farther S, with averages ranging from 6 to 12 knots.

Through Selat Karimata and the Java Sea, SW through NW winds blow 60 to 80 per cent of the time.

In the Flores Sea, the Banda Sea, the northern Arafura Sea, and the Gulf of Papua, winds are most likely out of the W through NW.

North through NE winds prevail in the Celebes Sea and Makassar Strait, while NW through N winds blow in the Molucca Sea.

In the seas off the E coast of New Guinea, winds are mainly out of the W through N. Winds begin to change in April. The Southwest Monsoon and the Southeast Trade Winds are established from about May through September or October. These winds are lighter than the Northeast Trade Winds. They are variable and more subject to the land-sea breeze regime close to the coasts. In general, winds blow in the 5 to 10-knot range, with winds of 22 knots or more occurring less than 5 per cent of the time. Gales are rare.

Along the southeast Malaysian coast and the NW coast of Borneo, winds blow out of the SE through SW or W 40 to 90 per cent of the time between May and September. From April or May through October or November, E through SE winds prevail over Selat Karimata, the Java Sea,the Flores Sea, the Banda Sea, and the northern Arafura Sea. Wind speeds range from 6 to 12 knots, with peaks occurring in July, August, and September.

Southeast through SW winds are common in the Makassar Strait, while winds out of the S through SW blow 40 to 70 per cent of the time in the Celebes Sea; the season in both these areas runs from about June through September and winds are light. Southeast through S winds are common in the Molucca Sea.

Winds in the Gulf of Papua and off the E coast of New Guinea blow primarily out of the E through S from March, April, or May through October, November, and December. The longest season is in the Gulf of Papua, while the shortest occurs over the Bismarck Archipelago.

Local Winds.—Land and sea breezes develop in the harbors and along the coasts of the islands. Sometimes the local interchanges between land and sea are not strong enough to r-verse the prevailing monsoon, but do produce diurnal changes in wind speeds. In general, the monsoons become stronger in the daytime on coasts facing into the wind and weaken at night. On lee shores the opposite is true. If an island affords good protection against the monsoon, the land and sea breeze prevail. While the nighttime land breeze is usually weaker, it can be strong along coasts where the mountains are near the sea.

The major local winds are, as follows:

1. **Sumatra.—**A sumatra is a squall, usually associated with a band of thunderstorms and characterized by sudden gusts, between Pelabuhan Kelang (Port Swettenham) and Singapore along the W coast of Malaysia during the Southwest Monsoon. They approach from Sumatera, but form in the Strait of Malacca during the late night and early morning hours. Heavy rain and thunder are usually associated with a well-developed sumatra, which may bring winds of 40 to 50 knots and drop temperatures by 10˚C. They are most likely during July and August.

2. **Barat.—**This squall is experienced along the E coast of Malaysia from December through February. It is a strong gusty W or NW wind and is associated with a tropical cyclone moving W from the Philippines. Considerable cloudiness and heavy rain generally accompany these squalls.

3. **Guba.—**A guba blows at Port Moresby about five or six times a year and may occur during any season. The guba is an early morning wind, usually lasting 20 to 30 minutes and reaching speeds of 50 to 60 knots. Squalls associated with convective activity have unroofed buildings and blown down houses in the islands off eastern New Guinea. Wind gusts have been estimated at 60 to 80 knots. A vessel has reported small circular storms encountered between Bougainville and New Ireland, with winds up to 25 knots.

Temperature.—Tropical latitudes, warm seas, and fairly steady monsoons all contribute to the high and uniform temperatures throughout the region year round. At almost all locations, the annual ranges of mean daily maximum and mean daily minimum temperatures are less than the mean diurnal range. Mean daily maximums are mostly in the upper 20s (˚C) and occasionally in the mid-30s (˚C), with mean daily minimums falling into the mid-20s (˚C). Cloudiness is usually responsible for any seasonal variations in temperature

Along the E and E coasts of Malaysia, the highest temperatures often occur in April and May, with slightly lower readings in December and January. In the New Guinea area, slightly lower temperatures are most likely in July, with the highest readings in October and November. Extreme temperatures throughout the area range from maximums of just less than 38˚C to minimums in the mid-teens (˚C).

Precipitation.—Of all the climatic elements, rainfall is the most variable. Marked variations occur regionally, locally, seasonally, diurnally, in duration and intensity, and from one year to the other. Much of the rainfall is heavy and is associated with the N and S movement of the ITCZ and the belt of E waves that lies just N of it. Most localities have individual precipitation regimes based on local topography and exposure. For example, coasts experiencing onshore monsoonal winds have less rainfall in the late afternoon and more during the night and early morning. Lee coasts show a minimum during the first half of the day, with a maximum in the afternoon and evening.

In general, annual amounts range from 1,800 to 3,800mm on an average of 100 to 200 days each year. Along the coasts of East and Peninsular Malaysia, 2,300 to 3,800mm fall on 150 to 200 days each year, with East Malaysia having the higher figures. October through January is the primary rainy period, with a secondary maximum during the spring transition.

The Northeast Monsoon is also responsible for a slightly wetter season throughout the coastal regions of Indonesia and New Guinea, where an annual average of 1,000 to 2,000Mm falls on 80 to 200 days. The wettest months usually are October or November through March or April.

This is not true around Ambon, Kokanau, and along the S coasts of the Maluku (Moluccas), where maximums occur

from May through August. The smaller rainfall amounts, less than 1,500mm, are for the most part restricted to the Lesser Sunda Islands.

Rainfall is most often in the form of showers or thunderstorms and can be intense. Torrential downpours of 100 to 300mm in 24 hours are common. Maximum 24-hour amounts are in the 100 to 400mm range. Ambon has experienced a 700mm rainfall in a 24-hour period.

Humidity.—The persistently high relative humidities in this region combined with high temperatures make conditions oppressive. There are some distinct variations in humidity. With few exceptions, highest humidity values occur during the Northeast Monsoon, particularly in the N; the lowest values occur during the Southwest Monsoon, particularly in the S.

In general, humidities are lowest from midday to early afternoon, falling into the 60 to 70 per cent range. They are highest during the night and early morning hours, when readings are 80 per cent and above. During the latter part of the Southwest Monsoon, humidity values drop considerably in the Lesser Sunda Islands, where they reach the 40 to 50 per cent range during the afternoon.

Cloud Cover.—Although it is often cloudy over this region, there are marked variations similar to those of rainfall. In general, cloudiness is greatest in the afternoon or early evening during the Northeast Monsoon arid on the windward slopes of mountainous coasts. It is least in the morning during the Southwest Monsoon and on leeward slopes.

Regionally, mean annual cloudiness is greatest over West Malaysia (more than 80 per cent) and least over the Lesser Sunda Islands (about 40 per cent).

Diurnally, cloudiness follows a definite pattern and illustrates the basic weather pattern during the Northeast Monsoon. At dawn, scattered clouds remain from the previous night's thunderstorm. By late morning, small cumulus clouds develop inland. These clouds develop during the day and become thunderstorms over land. At night the storm may cross the coast and move out to sea or another may form at sea and move ashore, depending upon the prevailing wind.

Cloudiness is greatest along the E coast of peninsular Malaysia, where cloudy skies (cloud cover >6/8) occur on more than 20 days per month year-round; clear skies are seen on only a few days, mostly in January, February, and March. East Malaysia is not quite as cloudy, and from February through April, clear skies occur on up to 5 days per month.

Throughout Indonesia and New Guinea, cloudiness is widely variable and locally dependent upon exposure. From October through March is generally the cloudiest period; June through September is generally the most clear.

At some locations along the coast of Jawa and the Lesser Sunda Islands, 15 to 20 days per month may have clear skies during this period.

Elsewhere, the range is less than 15days to about 2 days. During the cloudy period, cloudy days occur on about 10days to more than 20 days per month.

Visibility.—Visibilities are generally good throughout the region. Rain showers can reduce visibilities to nearly zero, but these are usually brief and not widespread. During the Southwest Monsoon in excessively dry years, a widespread haze develops over the area. It is particularly noticeable in the south. When this haze is thick, it may greatly reduce visibility. The particles of salt composing part of the haze may pick up moisture when the humidity increases and form thick fog in some sections, particularly over the waters between Sumatera and Borneo and infrequently near the southern Moluccas. In general, the haze reduces visibilities to between 3 and 6 miles. At its worst, it can reduce them to below 1 mile.

Currents

SOUTH PACIFIC OCEAN

Non-tidal Currents.—The major surface currents of the South Pacific Ocean are, as follows:

1. Pacific Equatorial Countercurrent—Flows E just N of the Equator between the Pacific North Equatorial Current and the Pacific South Equatorial Current.
2. Pacific South Equatorial Current—Flows W just S of the Equator.
3. Peru Current—Flows N along the coasts of Peru and Chile.
4. Mentor Current—Located about 500 miles W of the Peru Current.
5. Cape Horn Current—Sets SE off the S tip of South America.
6. South Pacific Current—Sets E across the South Pacific at about 50˚S.
7. Tasman Current—Flows NE off the W coast of New Zealand.

The surface flow is counterclockwise around an elliptical center between 25˚S to 40˚S and 90˚W to 160˚W. It is generally westward N of 25˚S and eastward S of 35˚S in winter and southeastward S of 40˚S in summer, except along the coasts of South America and New Zealand. Speeds are frequently in excess of 1 knot in the N side of the Pacific South Equatorial Current along the Equator, but are usually less than 0.5 knots in the central part of the ocean between 25˚S to 40˚S and 100˚W to 160˚W, and S of 55˚S except for the Drake Passage.

Tidal Currents.—Tidal currents are usually weak except in inlets along the coast, where speeds are highest. In nearshore waters, the tidal currents are usually reversing, flooding toward and ebbing away from the coast, or flooding and ebbing in opposite directions parallel with the coast. In regions of mixed or semidiurnal tides, two flood and two ebbs occur daily. In the region of diurnal tides, one flood and one ebb occur daily.

Rotary tidal currents occur offshore where the direction of flow is not restricted; speed will vary as the direction changes continuously through all points of the compass during the tidal day. The change in direction is generally clockwise in the Northern Hemisphere and counterclockwise in the Southern Hemisphere.

Northern South Pacific Ocean

Non-tidal Currents.—The Pacific South Equatorial Current sets W from South America to the western Pacific Ocean, occupying a belt between about 4˚N and 10˚S. Part of the current turns S at about 175˚W and joins the counterclockwise gyre of the South Pacific. The speed of this current is usually about 1 knot, but it frequently reaches 2 knots between l00˚W and 120'W during June, July and August. The Pacific Equatorial Countercurrent sets E between the west-setting Pacific North Equatorial Current and the Pacific South Equatorial Current, at a speed of 0.5 to 1.0 knot.

Eastern South Pacific Ocean

Non-tidal Currents.—The Peru Current is a narrow, fairly stable, current that flows N close to the South American coast; it originates from about 40˚S and flows past Peru and Ecuador to the SW extremity of Columbia. The most outstanding current in the Southern Hemisphere, the Peru Current is not very strong, with a mean speed of 0.9 knot in the N region, where the flow is most persistent. The Peru Current is frequently interrupted from December through March by the El Nino.

The El Nino is a warm current flowing S along the Peruvian coast from the Gulf of Panama. It is generally identified with large-scale disturbances which occur in the N part of the Peru Current about every 7 years, and has been observed from late December until March for many years.

In December, N winds blowing across Central America reach farther S and drive water from the Gulf of Panama Sd in a 1 to 2 mile wide tongue-shaped band along the Peruvian coast to between 3˚S and 6˚S. The intensity of this phenomenon increases considerably about every 7 years and influences a larger part of the N portion of the Peru Current. During such periods, the Peru Current retards and the temperature of the surface water rises sharply in a layer up to 20 miles wide and 22.9m deep. This condition can extend as far S as 20˚S. It is halted by the reappearance of the Southeast Trade Winds in March.

The Mentor Current originates mainly from the easternmost extension of the South Pacific Current at about 42˚S and 90˚W. It sets N and NW as a slow moving drift that extends about 900 miles W from the Peru Current at its widest section. It is easily influenced by winds and joins the W setting Pacific South Equatorial Current, completing the counterclockwise movement in the E part of the South Pacific Ocean. The Mentor Current has an average speed of about 0.5 knot; the speed in the central part of the current, at about position 26˚S, 80˚W is about 0.9 knot.

The Cape Horn Current flows E along the tip of South America into Drake Passage. The speed is normally about 1 knot, but at 70˚W, speeds occasionally reach 2.4 knots.

The South Pacific Current is a slow E setting current between 90˚W and l30˚W, at about 50˚S.

Western South Pacific Ocean

Non-tidal Currents.—From 20˚S to 30˚S, currents exhibit a slow SW drift at about 0.5 knot. East of New Zealand, between 30˚S and 4˚S, the set gradually turns from SW to SE. The Tasman Current flows NE along the W coast of New Zealand at a speed of from 0.5 to 1.0 knot. The West Wind Drift flows ESE across the ocean S of New Zealand.

The flow around New Zealand is NE along the W coast in the Tasman Current, SE along the N coast, S along the E coast of the North Island, and NE along the E coast of the South Island. The E coast currents merge with the SE flow through Cook Strait at about 44˚S. There is a S setting countercurrent along the immediate W coast of the North Island. The flow is generally less than 1 knot, except when NE setting currents are augmented by strong S winds.

Tidal currents of up to 5 knots occur in the Cook Strait; when superimposed on the average 0.5 knot current during periods of strong NW winds, a S current of 6 knots is possible.

NORTH PACIFIC OCEAN

Non-tidal Currents.—The primary current system of the North Pacific Ocean is characterized by a general clockwise circulation dominated by prevailing winds. Although the several currents comprising this system are fairly constant throughout the year, their boundaries and speeds exhibit some deviations, especially between the different seasons. The North Equatorial Current flows W between 10˚N and 20˚N. Part of the North Equatorial Current branches N when reaching the Philippines and flows along the coast of Japan as the Kuroshio Current. In the western Pacific Ocean, the surface current speeds and directions are extremely variable during the transition period from the Northeast Monsoon to the Southwest Monsoon. Although the transition from the Southwest Monsoon to the Northeast Monsoon is abrupt, the establishment of the Northeast Monsoon drift in the East China Sea is relatively slow, and surface current speeds and directions again are variable. At about position 35˚N, 140˚E the current turns E and part flows NE. The E flow turns gradually S; the greater part joins the North Equatorial Current to the W and NW of the Hawaiian Islands and completes a clockwise circulation. Northeast of the Hawaiian Islands to about 400 miles from the W coast of the United States another clockwise whirl, which is in part linked with the one to the W.

The N part of the Kuroshio Current mixes with the south-setting Oyashio Current and continues E as the Kuroshio Extension and then the North Pacific Current. Upon reaching the W coast of North America, part of this current flows N into the Gulf of Alaska; the larger part flows S as the California Current, which extends to about 25˚N. Close inshore is a seasonal countercurrent, generally known as the Davidson Current, which sets N close to the U.S. coast N of 32˚N. This current occurs generally between November and April, but is best established in January; strong opposing winds may cause the current to reverse. The California Current joins the west-flowing North Equatorial Current to complete the major circulation in the North Pacific Ocean.

In the Bering Sea, the Sea of Okhotsk, and the Sea of Japan, the currents generally set N along the E sides and counterclockwise around the basins. The major current in the Bering Sea is the Oyashio Current, which flows from the Anadyrskiy Zaliv S along the Siberian coast and continues along the Pacific side of the Kuril Islands. In the Sea of Okhotsk, the prevailing currents are generally weak throughout the year, but appear to be less complex in the winter.

The Tsushima Current sets N in the E part of the Sea of Japan and extends into Tatar Strait in summer, but seldom that far in winter. The Liman Current, formed by part of the Tsushima Current and river discharge in Tatar Strait, sets S in the W part of the sea and in winter may reach as far S as 35˚N.

The surface currents in the East China Sea and the Yellow Sea are partly seasonal and affected by the monsoon winds and the Kuroshio Current. The monsoon wind forces a reversal of the surface currents seasonally while the Kuroshio Current, a deep stable current, opposes the south-setting monsoon currents and results in variable currents in the central parts of the East China Sea and the Yellow Sea.

In the South China Sea, the currents are seasonal; complete reversal occurs with the change of the monsoon. During the transition periods, considerable variations in current directions occur.

Tidal Currents.—Tidal currents are the horizontal components of water movement ascribed to the influence of astronomical tide producing forces. The duration of the tidal current in a particular direction normally depends upon the relative magnitude of the diurnal and semidiurnal components of the tide. This relation changes from place to place, as well as with change of phase and declination of the moon. When diurnal components predominate, the current may be expected to set in either direction (flood or ebb) for about 12 hours. The flood and ebb currents will each set for periods of about 6 hours when the tides are semidiurnal. When the tide is mixed, the tidal current is characterized by a conspicuous difference in duration and velocity between the two floods or two ebbs.

Although knowledge of the vertical movements of the tides is fairly well established in this area, lack of information prevents the prediction of tidal currents, except for the Bahia Magdalena entrance. As a general rule, the speeds of tidal currents in a particular region vary in proportion to the range of the tide in that region; furthermore, they tend to flood in the direction of the tidal progression, which can be determined from known mean high water intervals. In the near shore areas, tidal currents set toward land, entering bays, inlets, and rivers. In open waters, tidal currents are generally weak and merely accelerate or retard the prevailing currents.

Tidal currents are rotary along the open coast from Washington to Dall Island and in Queen Charlotte Sound. Mean maximum speeds average about 1 knot.

Along the coasts of Central America and Mexico, the tidal currents within bays and inlets normally have speeds of 0.5 to 2 knots; under the influence of prevailing currents or winds, speeds may increase to 3 knots.

Tidal currents near shore may be strong at some locations in the East China Sea, the Yellow Sea, and Bo Hai. The strength and duration of succeeding flood and ebb currents may vary considerably near the times of maximum lunar declination.

Tidal currents on the coasts of Japan are semidiurnal and influenced by the Kuroshio Current on the S and E and the Tsushima Current on the W; tidal currents are generally weak in the Sea of Japan, but may attain considerable strength in the narrow passages and straits.

In the Kuril Islands, the Nanpo Shoto, and along the coasts of Hokkaido, the tidal currents are complex under the influence of the Oyashio Current.

In the passes between the Aleutian Islands, the flood sets ENE and the ebb sets SSW; in some passes tidal currents attain speeds of 12 knots.

In the Kuril Islands, the flood sets into the Sea of Okhotsk and the ebb sets opposite; speeds may reach 5 knots.

In the Sea of Okhotsk, the N part of the Sea of Japan, and Tatar Strait, the tidal currents are extremely mixed and in some locations they are diurnal. Speeds seldom exceed 1 knot except in straits and narrows.

Along the W coast of the Bering Sea, tidal currents exhibit large diurnal inequalities and are influenced by the coastal currents.

Northeastern North Pacific Ocean (including British Columbia)

Non-tidal Currents.—The general currents off the coast of British Columbia result from the east-setting Subarctic Current. In winter, the entire mass of the Subarctic Current turns N. In summer, the axis of the current is located at about 140˚W between 49˚N and 50˚N, approximately 600 miles off shore, where the current begins to divide. The larger part turns S and forms the California Current; the smaller part turns N past the Queen Charlotte Islands and forms the Alaska Current.

A coastal countercurrent sets NW fairly close to the coast of Vancouver Island at speeds of 0.25 to 1.5 knots. The current is strengthened during winter by prevailing S winds and at times reaches 2.5 knots. At its strongest, usually in winter, this coastal current will continue NE past Vancouver and the Queen Charlotte Islands. When weakest in summer, the countercurrent is influenced by ebb tidal currents flowing from the Strait of Juan de Fuca and flood currents setting N along the coast of Washington and across the entrance to the strait. However, at a distance of about 30 miles off the NW coast of Vancouver Island, the coastal countercurrent usually dissipates in an area of confused eddies.

The Davidson Current, a weak NW seasonal countercurrent which flows N from November through January to about 48˚N may, at times, be strong enough to join the coastal countercurrent setting NW along the coast of Vancouver Island.

Although the surface currents in the Inner Passage are mainly tidal, water movements also are caused by wind, runoff, and river discharge. These constitute the non-tidal or residual flow that usually results in a weak ill-defined circulation.

The resultant outflow from the Strait of Juan de Fuca probably is maintained by a hydraulic head established in the Strait of Georgia and Puget Sound. The weak current emerges from the strait and veers to the right, moving NW along the coast of Vancouver Island. This current is subject to annual variation caused by river discharge, runoff, and seasonal winds.

The currents in the narrow channels of the San Juan Archipelago become extremely turbulent because of mixing with the 9.1 to 12.2m of surface water discharging from the Fraser River. The net flow is N through Rosario Strait and S through Haro Strait.

Water discharging into the Strait of Georgia from the Fraser River spreads out, and most of it moves counterclockwise around the strait at speeds under 0.25 knot in open areas to almost 0.5 knot in channels.

In Queen Charlotte Strait, there is a weak resultant flow seaward. The current turns NW in Queen Charlotte Sound and is joined by part of the coastal current. The weak combined current continues NW across Queen Charlotte Sound and into Hecate Strait. The E part of this flow is met by a weak S flow from Chatham Sound and produces confused and variable currents in the N part of Hecate Strait.

The W part of this current passes into Chatham Sound and becomes a part of the weak W set through Dixon Entrance.

Tidal Currents.—The tidal currents are rotary along the open coasts from the S end of Vancouver Island to Dall Island, and in Queen Charlotte Sound. Mean maximum speeds are about 1 knot. In the vicinity of Swiftsure Bank (48˚33'N., 125˚00'W.), the rotary current is influenced by the ebb current from the Strait of Juan de Fuca and sets between SW and W from about 2 hours after one high water to 4 hours before the next high water. It then gradually turns clockwise until at high water it sets almost due N. From high water to 2 hours after high water, the current is nearly slack and changes quickly clockwise to the W. The maximum speed of the east-flowing

current is about 0.5 knot; the maximum speed of the west-flowing current about 1 knot.

The flood current sets around the N and S ends of Vancouver Island into the channels between Vancouver Island and the mainland and meet between Cape Lazo and Cape Mudge. Strong rips are encountered between Kuhushan Point and Cape Mudge on Vancouver Island; here, strong winds cause steep choppy seas to build up. Gales from the SE will cause steep confused seas, particularly during periods of the southeast-setting tidal current.

In the Strait of Juan de Fuca, the tidal currents are reversing; they flood into the strait and ebb out of the strait, but show some tendency toward being rotary, especially near mid-channel. There is no period of slack water; the currents change quickly and set across the channel at high speeds. Strengths of the flood and the ebb are nearly equal along the S shore of the strait, but the ebb is stronger and of longer duration from the center to the N side.

Throughout most of the San Juan Archipelago, the flow is very turbulent; violent tide rips are prevalent. The currents through Rosario Strait, in the E part of the archipelago, are stronger and of longer duration during flood than during ebb. The opposite is true in Haro Strait to the W.

In the Inner Strait and passages, the tidal currents follow the general directions of the channels, flooding into the many bays and inlets. The ebb usually sets in the opposite direction to that of the flood and generally is stronger. Mean speeds at springs are fairly strong and generally range from about 1 to 3 knots. Speeds often exceed 5 knots in some of the narrow channels and strong rips may form. In some narrows, such as Northumberland Channel, the current sets in the same direction throughout the tide cycle.

In semi-enclosed inlets, the speed of the tidal current decreases toward the inlet head and the current turns at or near the time of high and low water.

The greatest volume of water during flood enters the Strait of Georgia through the network of passages on the mainland side, particularly through Rosario Strait. The greatest volume during ebb comes from the W side of the Strait of Georgia, mainly through Haro Strait. In the middle of the Strait of Georgia, the flood tends to set NW and is influenced by strong N winds, which weaken the flood and may cause the slack after high water to occur earlier than predicted. Strong S winds have less effect, but tend to weaken the ebb and may cause the slack after low water to occur earlier than predicted. The turn of the tidal current from ebb to flood is usually prompt and generally occurs about 3.5 hours after low water. The time of turning from flood to ebb, however, is uncertain.

In Hecate Strait, the currents are of the reversing type; the flood sets Nh and the ebb sets S. They are influenced by strong N or S winds, which may cause them to set in one direction for extended periods.

The flood current that turns SE into Hecate Strait from Dixon Entrance greatly exceeds the ebb during mid-July to mid-September, especially in August in the N part of the strait, when speeds may reach 3 knots and there is little appreciable ebb or only slack water before flood. This flow will meet the north-setting flood from Queen Charlotte Sound about 30 miles farther south than usual, at approximately 53˚15'N, and results in variable currents and rips.

In the S entrance to Hecate Strait, the currents are weak, except close to shore.

In Dixon Entrance, the currents are of the reversing type; the flood sets E and the ebb sets W. The mean maximum speed is about 1.5 knots along the S side and about 2 knots along the N side. Currents are strongest around headlands, where rips and overfalls often occur. In mid-channel, the speeds are less; the mean maximum speed is about 1 knot. The flood branches N into Clarence Strait and S into Hecate Strait.

In the deep water inlets of British Columbia, speeds decrease toward the heads and currents change direction at about the times of high and low water, or shortly afterward. The water discharging from rivers into the heads of the inlets continues to flow outward; the outgoing ebb increases the outflow while the incoming flood decreases it. The seaward flow through the inlets is confined to a shallow zone between the surface and depths of 3.1 to 12.2m. Within this zone the current is fairly uniform with depth, although its strength is affected by the tide and winds. Below this shallow zone, the speed decreases sharply and there is slight net flow up the inlet.

Since the wind direction is most frequently up the inlets in summer, the effect of the wind is to reduce the strength of the seaward flow.

The main surface currents in the inlets often are limited only to a portion of the width of the inlet and are usually stronger in the middle section than at either side. The lines of demarcation between these currents are sometimes remarkably sharp.

Southeastern North Pacific Ocean (including the W coasts of Central America and Mexico)

Non-tidal Currents.—The California Current sets S parallel to the coast at speeds of 0.5 to 1 knot and off the S coast of Baja California at speeds less than 0.25 knot. From late October through April, an extension of this current, known as the Mexico Current, sets SE along the coast to the vicinity of 95˚W, where it usually turns W, but at times extends S as far as Honduras, with speeds from 0.5 to 1 knot. During the remainder of the year, this current sets NW along the Mexican coast as far as Cabo Corrientes, where it turns W and becomes a part of the North Equatorial Current.

Prevailing NNW winds cause upwelling along the coast, which continues more or less uninterrupted during spring to July. During autumn, the upwelling gradually gives way to a number of irregular eddies and is eventually replaced by the Davidson Inshore Countercurrent, which sets N along the Pacific coast of Baja California from November through January.

In the deeper central part of the Golfo de California, a prevailing southeast-setting current generally flows throughout the year at mean speeds ranging from 0.25 to 0. knot. In the S part of the gulf during winter, the southeast-setting current is fairly constant. However, during summer there is a weak inflow along the E shore of the lower part of the gulf.

The currents in the Gulf of Tehuantepec are chiefly influenced by the winds. In winter, the “tehuantepecer” (violent squally winds from N or NNE) over the gulf causes the surface currents to flow directly outward through the center of the gulf. This outflow is replaced by strong N and west-setting currents along the E portion of the gulf, and NE and east-setting currents along the W portion of the gulf. Upwelling may occur at this time. When the “tehuantepecer” is moderate, the currents

set in the opposite direction and have been observed to extend as far E as Champerico, Honduras, and as far W as Rio Verde.

Surface currents in Bahia de Sabastian Vizcaino set clockwise along the coast and form an eddy in the entire bay. Upwelling occurs along the S shore of Isla Cedros during the following strong NE winds. A region of convergence is believed to form in the N channel.

Currents along the W coast of Central America are irregular in speed and direction. They sometimes set ESE and WNW alternately for 3 to 4 days in each direction. Close to shore, these currents may attain speeds of 2 knots, with eddies and countercurrents which are associated with coastal indentations.

Tidal Currents.—Along most of the coast, the tidal currents flood N and ebb S for about 6 hours in each direction, except when the tide becomes diurnal and durations of flood and ebb are about 12 hours. Close inshore, currents flood into and ebb from bays and inlets at speeds of 0.5 to 2 knots. When tidal currents combine with prevailing currents or are influenced by winds, particularly in restricted channels, speeds may reach 3 knots.

In the Golfo de California, tidal currents predominate near the coast, with speeds of 1 to 2 knots. In the deeper central parts of the gulf, tidal currents are weak.

Offshore, tidal currents are usually weak and rotary.

Northwestern North Pacific Ocean (including the Sea of Okhotsk, the northern Sea of Japan, and the western Bering Sea)

Non-tidal Currents.—A weak counterclockwise flow in the Okhotsk Sea becomes negligible in the middle of the sea and along the coast, where tidal currents predominate.

A current originating from Amur River outflow sets N into the Sea of Okhotsk, follows the E shore of Sakhalinskiy Zaliv and combines with the counterclockwise current to round the N end of Sakhalin. Between the N extremity of Sakhalin and Mys Levenshterna, located about 25 miles S, the coastal current has a speed of 1 knot about 30 miles offshore; speeds of 3 to 4 knots may occur when this current combines with the tidal current flowing in the same direction. South of Mys Levenshterna, the speed decreases considerably and the current combines with the E flow through La Perouse Strait. This combined current divides with one part setting through the various straits in the S part of the Kuril Islands; the major part turns N into the main surface circulation flowing about 25 to 30 miles off the W coast of Kamchatka at about 0.5 knot. Closer to the coast, a countercurrent sets S.

At the entrance to Zaliv Shelikhova, a branch of the current follows the shore of the bay counterclockwise to about Mys Taygonos; the main branch follows the N shore of the Sea of Okhotsk at about 0.75 knot. A local current sets SW out of Zalif Shelikhova toward Ostrova Yamskiye and then along the N shore of the Sea of Okhotsk toward Mys Alveina.

After passing Tauyskaya Guba, the main current turns SW toward Ostrov lony and then sets toward Shantarskiye Ostrova. In the vicinity of these islands, the current turns E. At Ostrov Reyneke, it divides; a branch sets E toward the N end of Sakhalin while the other branch sets SE along the coast of Sakhalinskiy Zaliv and joins the outflow from the Amur River.

The Anadyr Current sets SW parallel to the Siberian shore as far as Mys Olyutorskiy. The current along this stretch has a width of about 60 miles and a speed of 0.5 knot in summer and 0.75 to 1 knot in autumn. Off Mys Olyutorskiy, the Anadyr Current divides; the main branch turns W and forms the constant Oyashio Current while the other branch enters Olyutorskiy Zaliv. The current follows the shore of Olyutorskiy Zaliv; during summer the velocity is 1 knot in the E part of the bay and increases to 2 knots E of Mys Kreshchenyy Ognem. West of this point, the flow decreases gradually to 0.5 knot. The speed is less in autumn.

Off Mys Olyutorskiy, the Oyashio Current is 120 to 150 miles wide; its speed is about 0.25 knot in summer and 0.5 knot in autumn. In the vicinity of 165˚E, the main branch turns S and sets along the E coast of Kamchatka; a secondary branch sets through Proliv Litke and rejoins the main branch at the S end of the strait. Between Mys Ozernoy, at the S end of the strait, and Mys Africa, about 90 miles S, the current is from 30 to 40 miles wide, with speeds of 0.5 knot in summer and 0.75 knot in autumn. The current sets constantly between Mys Afrika and Mys Lopatka, the S tip of Kamchatka, and varies only slightly in speed seasonally. Between Mys Afrika and Mys Shipunskiy, about 200 miles SSW, the current is 40 to 50 miles wide and sets SSW at 0.5 knot. Off Kronotskiy Zaliv, the current widens and partly enters the bay, following the coast line at reduced speed.

East of the main current, between 56˚N and 57˚N and 165˚E and 169˚E, there is a general set S at less than 0.5 knot.

From the Bering Sea, the Oyashio Current flows S along the coast of Siberia. Off the E coast of Honshu, the Oyashio Current meets the northeast-setting Kuroshio Current. The currents merge to form the Kuroshio Extension; at about 180˚ longitude it widens and weakens to become the North Pacific Current.

Tidal Currents.—In the Sea of Okhotsk, the diurnal inequality of the tidal currents is generally large. In some localities, the inequality is so pronounced that there is only one current lasting about 12 hours in each direction each day for several days a month. In many bays of the Sea of Okhotsk, the speed of the tidal currents is 4 to 5 knots, and, in the narrows, as much as 8 knots.

Along the shore of Penzhinskaya Guba overfalls, eddies, and countercurrents occur during strong tidal currents. Along the E coast of Sakhalin, flood currents set N at speeds usually less than 1 knot.

Along the W shore of the Bering Sea, tidal current data are sparse, but available observations show that along the E coast of Kamchatka, the tidal currents attain speeds of 1 to 2 knots and are stronger off capes than in the gulfs and bays. The tidal currents are complicated by the large diurnal inequality in the mixed tide and also to some extent by the Oyashio Current. As the flood tidal current progresses onshore toward capes, it divides to flow on either side of the cape. The ebb currents set in the opposite directions and meet off these capes, causing rips that may extend as far as 15 miles seaward.

At Mys Shipunskiy, the flood current sets NW at about 1 knot. From this cape S to the Kuril Islands, the tidal currents become stronger. Along the Kuril Islands, the flood current generally sets into the Sea of Okhotsk while the ebb sets in the opposite direction. The flood current sets NW through Kuril Strait at 4 to 5 knots.

Southwestern North Pacific Ocean (including Formosa Strait, the East China Sea, the Yellow Sea, the Sea of Japan, and the S coast of Japan)

Non-tidal Currents.—Off the E coast of Taiwan, the Kuroshio Current sets N and NE throughout the year, with mean speeds usually ranging between 0.5 and 2.5 knots. Close inshore, a south-setting countercurrent frequently occurs.

A branch of the Kuroshio Current sets N off the W coast of Taiwan; however, this current may be masked by the southwest-setting current during October through March. During April through August, the northeast-setting current augments the north-setting branch of the Kuroshio Current; speeds are as high as 5 knots. During September, a transitional month, the wind-driven currents are variable.

During September, a transitional month, the wind-driven currents are variable.

In Formosa Strait during May through August, the prevailing surface non-tidal flow is NE and is generally strongest and most constant. September is a period of rapid transition; the current appears to reverse throughout most of the strait at about the same time. During October through February, the current sets SW, and speeds are usually weaker than in summer. During March and April the transition is gradual, and the current reversal occurs first in the N part of the strait; in the S part of the strait the surface current continues to set SW and does not begin to reverse until April.

The currents in the East China Sea are dominated by the Kuroshio Current, which sets N and NE throughout the year at mean speeds ranging from 0.5 to 2.25 knots. From the coast of China seaward to slightly more than 100 miles, a southwest-setting current occurs from September through April, with mean speeds of 0.5 to 1 knot. From May through August, the current sets N to NE at speeds ranging from 0.5 to 1.25 knots.

In the southern Yellow Sea, the monsoons have a greater effect on the current set, although tidal currents usually predominate. A resultant S or SE set is likely to occur during September through April, with mean speeds of up to 1.5 knots; a NE set is likely to occur from May through August, with mean speeds of 0.25 to 1 knot.

In the northern Yellow Sea, tidal currents dominate; however, from September through April, the surface currents generally set S at speeds ranging under 1 knot, especially in the S third of Bo Hai and the NE corner of Korea Bay, where the effect of the monsoons is very small. A resultant E to SE set is likely during May through August, with speeds usually ranging from 0.25 to 1 knot. The current along the N coast of the Shantung Pan-tao flows E and is moderately strong and steady. In the vicinity of Kuantung Pan-tao and in Liaotung Wan, however, the currents are weak and variable, being influenced mainly by wind and river runoff.

In winter, the flow is S over most of this region and is strongest in December and January. In summer, the flow is N and is strongest in July and August. During spring and autumn, cur rents are variable. Along the W coast of Korea, from the vicinity of Inchon to the S tip of Korea, there is a countercurrent that sets N.

Near the SW tip of Korea, the flow turns E into Cheju Haehyop. Throughout the year, the current in Cheju Haehyop sets eastward, probably reaching its greatest strength during winter. Near 128˚E it merges with the Tsushima Current, which sets NE off the SE coast of Korea throughout the year. The Tsushima Current is strong most of the time, averaging about 1 knot; however, it may weaken somewhat during autumn.

In Western Channel, between Tsushima and southeastern Korea, tidal currents retard the general northeast-setting Tsushima Current during the southwest-setting flood and reinforce it during the northeast-setting ebb. Resultant current speeds range from 0.25 knot during flood to 3 knots during ebb. In the strait between Tsushima and Kyushu, the current sets NE throughout the year. Current speeds in Korea Strait also are affected by the seasonal variations of the monsoons; the strongest currents usually occur from July through November.

The Tsushima Current divides after setting through Korea Strait, a small branch flowing N along the E coast of Korea as far as Vladivostok in summer. During this season, the current is strongest and overcomes the weak south-setting coastal Liman Current, resulting in a constant N flow. When the current combines with the ebb current, the resultant speed may reach 2 knots.

During winter, this branch of the Tsushima Current is weakest and is influenced by the stronger south-setting Liman Current, which normally extends as far S as 39˚N, with speeds from 0.25 to 0.75 knot. Small eddies occur where the two opposing currents meet. Beyond its S limit at the surface, the cold Liman Current continues to flow S as a weak subsurface flow.

The main body of the Tsushima Current flows NE off the NW coast of Honshu. In summer, after entering the Sea of Japan, its speed is about 0.5 to 1 knot. In winter, the current is relatively weak, though near the islands and headlands speeds may exceed 1 knot, especially after NW gales. Tidal currents are generally weak off the coast of Honshu and irregular sets may result from winds and offshoots of the northeast-flowing Tsushima Current. Though the Tsushima Current does not attain great strength, resultant sets of ocean and tidal currents may flow with considerable speed; the augmented tidal current runs nearly throughout the 12-hour tidal period.

The predominant current in Tsugaru Strait results from the E set of a branch of the Tsushima Current.

Tidal currents occur throughout the strait but are only occasionally strong enough to influence the direction of the prevailing current; their influence is reflected mostly in a decrease or increase in the speed of the east-setting current.

The tidal currents are extremely mixed, with the weaker flood and ebb occurring daily being masked by the strong mid-channel current; consequently, the stronger daily flood and ebb currents result in a daily increase and decrease of the speed of the permanent current. Two increases and two decreases in speed occasionally occur on days when the moon is over the Equator and the tidal current is most nearly semidiurnal. A W flow of short duration may, at times, occur in mid-channel when the range of tide is greatest during periods of maximum lunar declination.

The greater portion of the N extension of the Tsushima Current flows E through La Perouse Strait throughout the year at speeds up to 2 knots.

The Tsushima Current flows as far N as Tatar Strait. There is no appreciable current in the gulf N of 50˚N. The Liman Current originates S of 50˚N and sets SW in the W part of the gulf to complete the counterclockwise circulation in the Sea of Japan.

South of Japan, the major current is the Kuroshio Current, which is formed when the North Equatorial Current divides W

of the Philippines and turns N. The Kuroshio Current sets NE between the Ryukyu Islands (Nansei Shoto) and the shallow East China Sea.

The Kuroshio Current divides near Yaku Shima; the weaker branch flows N through Korea Strait, with the stronger branch setting through Tokara Kaikyo and then along the S coast of Shikoku. There are slight seasonal variations in speed; the Kuroshio Current is usually strongest in summer, weakens in autumn, strengthens in winter, and weakens in spring. Strong winds can accelerate or retard the current, but seldom change its direction.

South of the promontory on the E side of the approach to Kii Suido, the Kuroshio Current sets E. In winter the speed is 3 knots within about 25 miles of shore and 2 to 3.25 knots about 90 miles offshore. Maximum speed occurs about 10 miles offshore. At about approximate position 32˚20'N., 137˚20'E., the current turns N and extends as far as 40 miles S of Omai Saki. The Kuroshio Current then sets NE and flows between O Shima and Miyake Shima at a maximum speed of 4 knots.

In the Izu Shoto region and NE, the south-setting Oyashio Current meets the Kuroshio Current, causing large eddies and variability.

Ten miles and 15 to 25 miles SSE of Nojima Saki, the Kuroshio Current flows NE at about 1.5 and 3 knots, respectively. The set is ENE at 1.5 knots in an area that extends 30 miles S from a location about 60 miles SSE of Nojima Saki. The Kuroshio Current maintains its strength and direction as far as 148˚E, where it merges with the Oyashio Current and continues E as the Kuroshio Extension.

Tidal Currents.—In regions where the tide is mixed, there is a marked diurnal inequality in the speeds and durations of the two flood and two ebb currents that occur each tidal day, particularly during times of maximum lunar declination. The strengths and durations of the tidal currents vary throughout this area and speeds as high as 8 knots may be attained in some places.

Off the E coast of Taiwan, the tidal currents set N and S and are noticeable only close inshore, or shoreward, of the W boundary of the Kuroshio Current.

Off the W coast of Taiwan and in the Pescadores, the tidal currents alternate N and S. The speed of the prevailing surface current during the Southwest Monsoon is increased by the north-setting flood current and weakened by the south-setting ebb current. The tidal currents similarly affect the speed of the permanent north-setting coastal branch of the Kuroshio Current.

In Formosa Strait, the flood current sets S in the N entrance and N through the S entrance. The flood currents meet along a line between about 24˚30'N on the Taiwan shore and 25˚20'N on the China coast; the ebb currents flow in the opposite directions. The principal effect of the alternating tidal currents is to decrease or increase the speed of the prevailing non-tidal current. When the non-tidal current is stronger than the opposing current, the resultant flow will be in one direction continuously. Strongest currents occur during July, particularly at springs, when the strong flood tidal current and the northeast-setting seasonal non-tidal current set in the same direction.

Between Lien-hua-feng Chiao (22˚56'N., 116˚29'E.) and Chou-Shan Ch'un-tao (30˚N., 122˚E.), the alternating N and S tidal currents follow the trend of the coast; the north-setting currents cause strong onshore sets. Tidal currents are rotary N of the Chou-shan Ch'un-tao and off the Chang Chiang entrance, attaining a maximum speed of 2.5 knots. About 150 nautical miles N of the Chang Chiang, the tidal currents are rotary and weak.

Along the N side of Shan-tung Pan-tao during the Southwest Monsoon, tidal currents setting in and out of Bo Hai are affected by discharge from the rivers flowing into the gulf. The west-setting current is often negligible, whereas the east-setting current occasionally attains 3.5 knots and continues for long periods.

In Liaotung Wan, the mean tidal current speeds are 1 to 2 knots. The outgoing ebb is accelerated during the rainy summer and the incoming flood is retarded by river outflow.

In the head of Korea Bay, the tidal current floods N and ebbs S, at maximum speeds of about 3.5 and 4.5 knots, respectively. Off the W coast of Korea, the tidal currents flood N and ebb S, and usually overcome the weak surface current. Speeds range from about 1.5 knots offshore to over 8 knots in the narrow passages among the many islands. In the open Yellow Sea regions, the tidal currents are rotary.

When the prevailing NE current is weak in Korea Strait, the flood current may predominate as a SW flow of short duration. The nearshore tidal currents change near the time of local high and low water, except among the islands at the W end of the S coast of Korea, where the change may occur 2 to 3 hours later. Mean maximum speeds in the narrow passages off the S coast are 2 to 3 knots and may reach a maximum speed of 4.5 knots.

In Western Channel, the NE resultant of tidal and non-tidal flow fluctuates twice daily and reaches mean maximum speeds of 2.5 to 3 knots during ebb about 3 hours after high water; minimum speeds occur during flood about 3 hours after low water at Busan.

Tidal currents along the SE coast of Korea are complex because they occur in regions where tides are both mixed and diurnal. The direction and speed of tidal currents close to shore are difficult to predict, but they usually flood into and ebb out of bays and inlets, with maximum tidal current speeds occurring about mid-tide. Close to shore at about 35˚30'N, the tidal currents reverse periodically and attain speeds of 1 to 2 knots. They then become progressively weaker and more irregular N along the E coast. The offshore tidal currents flood S and ebb N, but are noticeable only as a strengthening or weakening of the permanent coastal current.

Along the coasts of Tsushima, tidal currents flood S and ebb N, turning at about the time of local high and low water. Tide rips occur off the W and N sides of Tsushima.

In the Sea of Japan, tidal currents are negligible, except in the approaches to Tsugaru Strait and La Perouse Strait.

In Tsugaru Strait, the prevailing non-tidal current sets strongly E at speeds occasionally exceeding 6 knots. Tidal currents are mixed and the weaker flood and ebb occurring daily are masked by the strong east-setting mid-channel current; consequently, the stronger daily flood and ebb currents cause this permanent flow to increase and decrease speed once a day. The tidal currents may only occasionally be strong enough to change the direction of the prevailing current.

In La Perouse Strait, the prevailing current sets E. Off the Soya Misaki, speeds range between 2.5 and 4 knots. Off Nishi Notoro Misaki, tidal currents flood E and ebb W, at speeds up to 3.5 knots. North of Nijo Gan, currents are variable.

In the narrows of the Tatar Strait, the north-setting flood current reverses from 1.5 to 2.5 hours after the moon's local transit. The tidal currents reach a maximum speed of about 5 knots at springs. In the N part of Tatar Strait, the tidal currents are semidiurnal, flooding N and ebbing S, at a mean maximum speed of about 0.75 knot.

After passing through the N end of Tatar Strait, the north-setting flood reaches a mean maximum of 2 to 3 knots about 17 miles NNW of the strait. It decreases gradually for another 10 miles in the same direction until it reaches a speed of about 1 knot, and then is further weakened by the outflow from the Amur River. This outflow branches N and S from the river mouth and strongly affects the tidal currents in the gulf, retarding both floods and accelerating both ebbs. The effect of the Amur River discharge is stronger in the W part of the gulf than in the E part and results in complicated tidal currents, which include variable eddies, overfalls, and strong irregular currents near the shore. In the N end of the gulf, the tidal current ebbs N for about 18 hours, with a maximum speed of 4 knots, and floods S for less than 6 hours, at a maximum speed of 1.5 knots.

Along the S coast of Honshu tidal currents are weak and follow the shoreline, flooding W and ebbing E. The tidal currents are influenced by the strong eastnortheastward-setting Kuroshio Current.

Along the E coast of Honshu, tidal currents are weak, flooding W and ebbing W; reversals occur near times of high and low water. Tidal currents along the N part of the E coast are influenced by the Oyashio Current; tidal currents along in the S part by of the E coast are influenced by the Kuroshio Current.

SOUTHEAST ASIA

Non-tidal Currents.—The major current systems are the west-setting Indian South Equatorial Current and the reversing monsoon drift in the South China Sea. The Indian South Equatorial Current, induced by the Southeast Trade Winds, usually does not exceed 1.5 knots.

The monsoon drift during October through March extends from Formosa Strait SW past Vietnam, through Selat Karimata, and E through the Java Sea. It is generally strongest in November, December, and January, but off Vietnam it is strongest in October, when it may exceed 3 knots. The current reverses with the change of monsoons, flowing N from Karimata Strait during May through September.

Reversing tidal currents usually predominate in the coastal waters, but at times may be masked by non-tidal currents

Tidal Currents.—Tidal currents in the region are semi-diurnal, mixed, or diurnal. Rotary currents occur offshore where the direction of flow is not restricted; their speed varies, and sets change continuously through all points of the compass during a tidal day. Near shore tidal currents are usually reversing and flood toward or parallel to the coast; the ebb is in the opposite direction.

Eastern Southeast Asia

Non-tidal Currents.—The major currents are, as follows:

1. **Kuroshio Current in the NW.—**Originates from a north-setting branch of the North Equatorial Current that begins off the E coast of the northern Philippine Islands and extends to Taiwan.

2. **North Equatorial Current at about 10˚N.—**Sets W across the North Pacific Ocean to the Philippine Islands. The mean position of the S boundary of the North Equatorial Current is about 10˚N; the current speed ranges from about 0.3 to 1.4 knots. At times, the current may attain speeds exceeding 2 knots.

3. **North Equatorial Countercurrent at about 4˚N.—**Sets E across the North Pacific Ocean between the west-setting North Equatorial Current and South Equatorial Current. It varies in width from approximately 120 to 150 miles and is most pronounced in July, August, and September. The speed ranges from about 0.5 to 1.4 knots and is greatest in the W part, where it is as high as 3 knots at times.

4. **South Equatorial Current at about 7˚S.—**Sets W across the Pacific Ocean between about 3˚N and 10˚S, narrowing as it approaches the East Caroline Basin located S of the Caroline Islands. Its N edge turns clockwise into the North Equatorial Countercurrent. The speed is about 0.5 to 1.4 knots. The current is strongest in the W part, where it may attain speeds exceeding 2 knots.

Reversing tidal currents usually predominate in the coastal waters, but at times may be masked by non-tidal currents. Descriptions of coastal non-tidal currents are given for the following geographical areas:

1. **Philippine Sea.—**Currents in the N part of the Philippine Sea are less stable than in the S part. A SW flow is present in the E part of the Philippine Sea and is sometimes known as the Kuroshio Countercurrent. Its mean speed is about 0.6 knot and when this relatively cold water meets the warmer central Pacific Ocean water at the N boundary of the North Equatorial Current, several eddies are formed along the line of the subtropical convergence. In the region adjacent to the Bonin Islands, a cyclonic eddy may occur from February through May.

In the S part of the Philippine Sea, the North Equatorial Current sets W toward the northern Philippine Islands, where it divides into two branches. One branch turns clockwise and flows N along the E coasts of Luzon and Taiwan at a speed ranging from 0.5 to 1.4 knots and becomes the Kuroshio Current. The other branch turns counter-clockwise and flows S along the E coast of Mindanao to the entrance of the Celebes Sea where it subdivides, one part turning SW into the Celebes Sea and the other flowing E into the North Equatorial Countercurrent. The S flow ranges from 0.8 to 1.4 knots and sometimes attains speeds exceeding 3 knots.

2. **Molucca Sea.—**The currents in the Molucca Sea reflect the monsoonal winds. In the N entrance, the currents generally set SW from February through April, NE from May through October, and E from November through January.The speed is about 0.5 to 1 knot.

3. **Halmahera Sea.—**In the N part of the Halmahera Sea, the current generally sets SW from December through May, NW from June through August, and ESE from September through November. In the S part of the Halmahera Sea, the currents generally set ESE from March through May, SW from June through November, and SE from December through February. Speeds vary from about 0.5 to 1.4 knots.

4. **Bismarck Sea.—**From late October through March the current in the Bismarck Sea generally sets SE along the coast of New Guinea. From April through September, the current generally sets NW. Speeds are about 0.5 to 1.4 knots;

the highest speed usually occurs in the SW part from July through September.

5. **Solomon Sea.—**The Northeast Trade Winds influence the current in the Solomon Sea. In April and May, the currents generally set NW, except off the S coast of New Britain, where they set W. In June and July, the currents set W throughout the Solomon Sea. In August and September, the currents set SW in the E part of the sea, turn W in the center, and then set NW in the W part. In October the, currents begin to set NW in the E part, SE in the W part, and continue through November. In December, the currents be-gin to turn N, then NE, in the W part and continue through March with a clockwise circulation in the E part. The speed, about 0.4 to 1.4 knots, is strongest off the S coast of New Britain from July through September.

Tidal Currents.—Tidal currents in the region are semi-diurnal, mixed, or diurnal. Rotary currents occur offshore where the direction of flow is not restricted; their speed varies, and their set changes continuously through all points of the compass during a tidal day. Nearshore tidal currents are usually reversing, flooding toward and ebbing away from the coast, or flooding and ebbing in opposite directions parallel to the coast.

Tidal currents are usually weak except in channels and inlets along the coasts, where speeds are highest. In nearshore waters, the tidal currents are usually reversing, flooding toward and ebbing away from the coast, or flooding and ebbing in opposite directions parallel with the coast.

In regions of mixed or semidiurnal tides, two flood and two ebbs occur daily. In the region of diurnal tides, one flood and one ebb occur daily. Rotary tidal currents occur offshore where the direction of flow is not restricted; speed will vary as direction changes continuously through all points of the compass during the tidal day. The change in direction is generally clockwise in the Northern Hemisphere and counterclockwise in the Southern Hemisphere.

The currents in San Bernardino Strait are mainly tidal but are influenced by monsoon winds. From November through April, the speed and duration of the flood is increased by NE winds, while the ebb will be decreased or even masked at times; from June through September, the opposite effect is caused by SW winds.

Tidal currents usually predominate, with two floods and two ebbs each tidal day, except near times of maximum N and S lunar declination, when only one flood and one ebb occur each tidal day and the flood lasts up to 18 hours. In San Bernardino Strait, the flood sets SW and the ebb sets NE. In the narrow part of the strait, tidal currents attain speeds of about 8 knots at springs and 4 knots at neaps.

During the south-setting flood current in the W part of Capul Pass, a current sets N along the W shore of Dalupiri, causing a long line of rips and eddies that gradually moves across the pass during the tidal cycle. In the channels between San Andres Island, Aguada Island, and Escarpada Island, strong rips occur, particularly during the flood currents. In Biri Channel and nearby channels, the flood sets W and the ebb sets W; both are strong at times. Flood and ebb begin about 4 hours after low and high water.

The tidal currents in the New Guinea area do not usually exceed 2 knots. The tidal current along the SW coast floods E across the Arafura Sea toward Torres Strait. The ebb current is stronger and of longer duration than the flood. These tidal currents, predominantly mixed, have a speed of about 2 knots and are noticeable out of sight of land. In the mouth of the Merauke River, the ebb sets for 7 hours and reaches 2 knots, the flood sets for 5 hours and attains a speed of 1 knot; the tidal currents are noticeable 60 miles above its mouth. Abreast of the town, the current speed may reach 5 knots.

The tidal currents in Torres Strait are semidiumal with an appreciable diurnal inequality which is greatest in the W approaches. Hydraulic currents, which result from a difference in water level between both ends of the strait, are caused by two independently oscillating tidal systems in this region. At times, usually during neap tides, the prevailing ocean current dominates and the resultant flow is in one direction for several days. The speed of a strong hydraulic current combined with a strong ocean current may reach 8 knots in the strait.

Throughout Prince of Wales Channel and in the approaches between Twin Island and Goods Island, the currents flow at the times predicted in the tide tables for Hammond Rock. The speeds diminish as the channel becomes wider and in the entrances, the speeds are only about 30 per cent of those predicted at Hammond Rock. Near Booby Island, current speeds are fairly weak. In the vicinity of Harvey Rock and Saddle Island, the currents begin, and reach maximum speed, about 30 minutes earlier than at Hammond Rock, but in these more open waters the speeds are comparatively weak.

In Endeavour Strait, the currents begin and reach maximum speeds about 40 minutes later than off Hammond Rock and, except in the more restricted parts of the strait, their speeds are not more than 30 per cent of those off Hammond Rock. Near the head of the Gulf of Papua, at springs, the flood current sets NW at 2 knots and the ebb sets SE at 2.5 knots.

At the E tip of New Guinea, the tidal currents in the narrow part of China Strait have a maximum speed of 6 knots, from 2 to 3 knots in the wider parts, and less in the open approaches. The tidal currents are semidiurnal with the NE flood beginning 3 hours before high water and flowing until 3 hours after high water. The ebb sets SW for 6 hours beginning immediately after high water. The durations of the tidal currents may vary an hour or more either way, depending on the force and direction of the wind.

Western Southeast Asia

Non-tidal Currents.—The major current systems are influenced by the winds, and a reversal of current occurs seasonally with the change of the monsoon. Mean maximum current speed throughout the following text is defined as the mean of the highest 33 per cent of observed current speeds in the prevailing direction and will be generally higher than the mean speeds.

Descriptions of non-tidal currents are given for the following geographical areas:

1. **Indian Ocean (N of 20˚S).—**The current sets NW and W into the Indian South Equatorial Current, with the remainder turning toward the coast of Australia; the speed of the main part seldom exceeds 1 knot. The west-setting Indian South Equatorial Current varies seasonally in strength and width. Its mean maximum speed from May through September is 1.4 knots, while from October through April it is 1.2 knots. The N boundary of the current extends north to the coast of Java during July through September, but is displaced S during the remainder of the year.

A current sets E along the S coast of Jawa (Java) from November through June, when the Indian South Equatorial Current has moved farther S. Its mean maximum speed during February and March, the months of strongest flow, is 1.8 knots. The S boundary of the current is usually between 60 and 90 miles offshore.

Along the SW coast of Sumatera, a current sets SE during all months. It is strongest during October through April, when its mean maximum speed is 1.5 knots.

2. **The Timor Sea and the Arafura Sea.—**From November through March, currents are variable in the Timor Sea, except near the SE coast of Timor, where a current flows SW during all months.

In the middle of the Arafura Sea, the current flows W throughout the year. This flow is strongest from April through October, when it continues through the Timor Sea and into the Indian South Equatorial Current; there is variability during other months.

Current speeds in this region are usually less than 1 knot.

3. **The Flores Sea, the Banda Sea, the Ceram Sea, and the Molucca Sea.—**From May through September, currents flow generally W through the Flores Sea, the Banda Sea, and the Ceram Sea and N through the Molucca Sea. The flow is opposite from November through March, except for a N flow in the Banda Sea during December from February. Currents are variable during April and October.

In the S part of the Flores Sea there is a permanent E flow along the N coasts of the Lesser Sunda Islands. This current is strongest and most stable during February and March, when the mean maximum speed is 2 knots; in July and August, the mean maximum speed is 0.9 knot.

4. **The Java Sea.—**Currents in the Java Sea, which are controlled by the monsoon winds, usually flow E from November through March and W from May through September. During April and October, the currents are changing direction.

The east-setting current has mean maximum speeds of 1.1 knots in theW part of the sea, 1.6 knots in the central part, and 2 knots in the E part S of Makassar Strait. The west-setting current has mean maximum speeds of 1 knot in the W part of the sea, 1.4 knots in the central part, and 1.7 knots in the E part.

In Selat Sunda, resultant currents set SW during all months except November, when they set NE; speeds of 0.7 to 1.5 knots have been observed in the strait proper. In the remainder of the strait area, the currents are less stable, with mean speeds of 0.4 to 1.4 knots.

5. **Makassar Strait.—**Currents in Makassar Strait are little affected by monsoon winds, except in the S entrance. The currents flow into the strait from the Celebes Sea and set S and SW, with large clockwise gyres in the W part from May through September. A N flow occurs along the Sulawesi coast in December and January.

In the S entrance to the strait, the currents set SW from April through October and SE from November through March. The mean speeds vary from 0.4 to 2.2 knots, with the highest speeds in the narrow part of the strait in April.

South of Mindanao, a permanent current enters the Celebes Sea and sets constantly S and SW, with a mean maximum speed of 2.5 knots. As it flows W, it becomes less constant and slower; between 3˚N and 4˚N, and 123˚E and 124˚E, the mean maximum speed is 1.6 knots and the set varies from SW to NW.

The south-setting current in the W part of the sea is strongest from October through January, when its mean maximum speed is 1.9 knots. The E flow along the N coast of Sulawesi has a mean maximum speed of 1.4 knots.

6. **Sulu Sea.—**Currents in the Sulu Sea are influenced by the W flow through the straits of the Philippine Islands, by the N flow from the Celebes Sea, and by S and E flows from the South China Sea through Mindoro Strait and Balabac Strait.

The currents in Sibutu Passage set S from August through February and N from March through July.The S current is strongest in November and December, with a mean speed of 1.8 knots and a mean maximum speed of 2.5 knots. The N current has a mean speed of 1 knot and a mean maximum speed of 1.3 knots.

Overfalls, 150 miles long and between 0.75 to 1 mile wide, may be encountered in the Sulu Sea during spring tides. Breaking waves of up to 3m have been reported in the over-falls. The overfalls appear to be generated by tidal action in Sibutu Passage, where the tides at each end of the passage are about 4 hours out of phase, resulting in a series of waves being formed, 6 miles from crest to crest, moving NNW across the Sulu Sea toward Palawan.

7. **Selat Karimata.—**In Selat Karimata, the surface currents set S from mid-October through early April, then undergo an abrupt change in direction in late April. The currents set N from May through August and are variable in September and early October. The highest seasonal mean maximum speeds are 1 knot in December and 0.8 knot in August.

8. **Strait of Malacca.—**Currents in the Strait of Malacca are mainly tidal, setting alternately NW and SE.

Surface currents are greatly influenced by the monsoons, particularly off the W coast of Sumatera, where they often show rotary characteristics, and along the E coast of the Malay Peninsula. The prevailing wind-driven currents set NW from May through September and SE from November through March. During the transition months of April and October, the currents are weak and variable.

Non-tidal wind-driven currents usually prevail, except in near shore regions, Singapore Strait, and the Strait of Malacca.

9. **South China Sea (3˚S to 15˚N).—**The strongest and most stable currents are in the W part of the sea throughout the year; in the E part currents are usually weak and variable. From October through March, the currents in the W part flow S past Vietnam and the Malay Peninsula to Selat Karimata. Currents are generally weak in October and increase in strength during November and December, except along the coast of Vietnam, where the south-setting current between 11˚N and 15˚N has a mean maximum speed of 3 knots in October, 2.5 knots in December, and 2.2 knots in March. The current decreases in speed as it continues past the Malay Peninsula and into Selat Karimata, where the mean maximum speed is 1 knot in December. In April, currents are weak, except along the coast of Vietnam between 11˚N and 15˚N.

From May through September, the current flows N through Selat Karimata, along the Malay Peninsula, and NE

past Vietnam. The flow is strongest in August, with mean maximum speeds of 0.8 knot in Selat Karimata and 2.1 knots off the SE coast of Vietnam. The NE flow in the open sea between 10˚N and 15˚N has a mean maximum speed of 2 knots in August.

10. **Gulf of Thailand.—**The speeds and directions of surface currents are influenced mainly by monsoon winds. Local winds and river discharge may cause local currents to set in any direction. Current speeds usually range between 0.2 and 0.8 knot offshore, but are stronger near shore. During periods of strong monsoon winds, the combination of wind-driven and tidal currents may attain speeds as high as 4 knots near the head of the gulf. Currents are variable during the transition periods between monsoons, but little data are available.

11. **South China Sea (N of 15˚N).—**During October through March the general flow in the open sea is W. The current flows SW through Formosa Strait, along dIe coast of China to Hai-Nan Too, and W to Vietnam. Along the W coast of Luzon and in Luzon Strait, the current flows N, with a mean maximum speed of 1.5 knots. During May through August, the current flows NE in all of the N part of the South China Sea, except near Luzon and in Luzon Strait, where the flow is N. The mean maximum speed along the W coast of Luzon is 1.1 knots and is 1.6 knots in Luzon Strait.

In April and September, the currents flow W in the open sea and NE through Formosa Strait. The permanent NNE set along the E coast of Taiwan has a mean maximum speed of 2.3 knots and is part of the Kuroshio. Currents in Formosa Strait are mainly tidal; seasonal non-tidal currents produce a net SW flow from October through March and a net NE flow from April through September. Within about 40 miles of the SW coast of Taiwan there is a N set throughout the year, which results mainly from a branching of the Kuroshio Current at the S tip of the island. Along the S coast of China, the current during the Northeast Monsoon sets constantly WSW nearly parallel to the shore. In the deeper offshore water, the currents are weaker than those near shore where the tidal currents may prevail at springs.

Between Macau Island (22˚11'N., 113˚34'E.) and Shang-Chuan Tao (21˚36'N., 112˚44'E.), the current setting W at 1 to 2 knots is influenced by discharge from the Chu Chiang. When the Southwest Monsoon is steadiest, this current may set weakly E.

In the Gulf of Tonkin, the currents are mainly dependent on the wind and generally flow parallel to the coast, with maximum speeds occasionally reaching 3 knots. Tidal currents predominate near shore.

Tidal Currents

In Formosa Strait, two flood currents and two ebb currents occur each tidal day. The flood current flows N in the S entrance and S in the N entrance. These currents meet along a line between about 24˚30'N on the coast of Taiwan and 25˚20'N on the Chinese mainland. The strongest tidal currents occur in the channel between Taiwan and Penghu Chun-Tao, where flood current speeds of 4 knots have been recorded at springs.

The tidal currents in Luzon Strait are predominately mixed, with a pronounced difference in the speeds of successive floods and ebbs. An exception to this pattern occurs off the NW coast of Luzon, where the tidal currents are diurnal (one flood and one ebb daily). The flood current sets W and the ebb current sets E in most parts of the Luzon Strait area, but variations occur in some regions.

A maximum speed of 5 knots occurs in the channels between Ami and Mabudis and between Sabtang and Batan; a minimum speed of 1.5 knots occurs in the channel between Diogo and Batan and off the NE and NW coasts of Luzon. Along the coast of China, the tidal currents will reach mean maximum speeds of about 2 knots, particularly in the channels formed by the various islands, and will be influenced by discharge from the Chu Chiang.

Tidal currents are diurnal in Hainan Strait; the flood current sets E for about 16 hours, and the ebb current sets W for about 8 hours; speeds at strength range from 3 to 5 knots. For 3 or 4 days after equatorial declination of the moon the current shows mixed characteristics in speed and duration; speeds at this time are usually less than 1 knot.

In the Gulf of Tonkin, the tidal currents are noticeable mainly near the shore and have been observed to set at a maximum speed of 2 knots near the entrance to the Song Ka S of Hai Phong (20˚52'N., 106˚40'E.). Reversing currents occur in the approaches to Cua Cam and Song Bach Dang.

In the offshore areas and larger passages of the South China Sea, the tidal currents are generally weak. They accelerate or retard the speeds of the monsoon currents, but seldom change their direction. The flood current sets S in the area. Near shore, on shoals, and in the smaller passages the tidal currents may prevail over the general currents. In Vinh Cam Ranh, the tidal current speed is always less than 0.5 knot, while in the narrow entrance to the bay the speed may exceed 0.5 knot at times. In the vicinity of Mui Vung Tau (Cap St. Jacques) (10˚19'N., 107˚05'E.), at the Song Sai Gon entrance, the flood sets NW and the ebb sets SSE, at a maximum speed of about 2.5 knots at springs.

The ebb usually sets longer than the flood; during the rainy season this difference may be more pronounced, with fresh water discharge resulting in current speeds reaching about 4 knots during ebb. Near the mouths of the Mekong River, changes in current directions are to be expected. Near the delta, the flood current sets NW into the rivers while the ebb current sets outward. The tidal current speed off the coast averages 1 knot. Near the river mouths, the speed is about 1.5 knots, which is the approximate speed in the lower reaches of the Mekong River.

Off the mouths of the Mekong River and to a distance of about 20 miles seaward, the general direction of the flood tidal current associated with the rising tide is SW while the general direction of the ebb tidal current is NE.

The tidal currents farther offshore are rotary clockwise, with the greatest changes occurring shortly after times of local high and low waters. Surface winds can modify the tidal currents. From June through August, SW winds may increase or decrease the tidal current speeds by 0.5 knot. Short period changes in current speed and direction will be caused by land and sea breezes, tropical disturbances, and thunderstorms.

In the Gulf of Thailand, the tidal current usually predominates over the non-tidal current in the coastal waters; however, during the height of the monsoons, a strong wind-driven current will occur in some of the coastal areas. During these periods, the tidal currents will become more irregular in speed,

duration, and direction. The tidal currents in the Gulf of Thailand are diurnal in character, setting in one direction for 8 to 10 hours, with an intervening slack period of 2 to 4 hours. Along the E coast of the Gulf of Thailand and along the W coast N of Hilly Cape, the flood current sets N; S of Hilly Cape, the flood current sets S. Except near the head of the gulf, speed of the currents does not usually exceed 3 knots.

In Singapore Strait and the Strait of Malacca, where the currents are mainly tidal, the regime is complex because of the combined effects of the diurnal and semi-diumal components and wind-driven currents. Flood and ebb, respectively, set W and E in Singapore Strait and SE and NW in the Strait of Malacca. The wind-driven currents tend to increase the speed and duration of the tidal currents when setting in the same direction and to decrease or mask them when setting in the opposite direction, resulting in a net W or NW flow through the straits. In Singapore Strait and between islands in the S approaches to the Strait of Malacca, diurnal and mixed tidal currents occur. Speeds at strength are usually less than 3 knots, but may be as high as 6 knots in narrow channels.

Diurnal tidal currents predominate in Selat Karimata; the durations of flood and ebb can be expected to be about 12 hours each. Tidal currents are weak and variable in the open sea. Near shore areas, flood tidal currents set toward shore and into bays, inlets, and rivers; ebb tidal currents set in the opposite direction. During transitional periods when the wind-driven currents are weakest, tidal currents may reach 2 or 3 knots in narrow passages along the coast. In the Java Sea, the monsoon surface currents predominate and the tidal currents are hardly appreciable.

In the straits of the Indonesian Archipelago, from Jawa (Java) to Wetar, flood currents set N, and ebb currents set S. The resultant current is stronger and of longer duration at flood than at ebb from November through April; the opposite is true from May through October.

Tidal currents in Selat Sunda are diurnal; the flood is NE and the ebb is SW. For about 3 or 4 days after Equatorial declination, the current shows mixed characteristics in duration and speed. Durations can range from 8 to 16 hours. Maximum current speeds seldom exceed 2.5 knots, but may reach 3 knots during ebb when augmented by N winds from April to September; tide rips occur in the N entrance to the strait. The flood current will be increased about 0.5 knot by prevailing moderate SW winds from October to March; the ebb will be increased about 0.8 knot with E winds and 1.3 knots with light N winds from April to September.

In the N entrance to the W channel of Selat Surabaya, the maximum speed is about the same as predicted for Sembilangan (3 knots). As the strait broadens, the speed diminishes and in offshore waters the influence of the monsoon drift is predominant. Off the mouth of Kali Miring, the currents begin and reach their maximum speeds about half an hour earlier than the predicted times for Semibilangan. In Surabaya Road and in the E channel of Surabaya Strait, the currents begin and reach maximum strength about half an hour earlier than the predicted times for Sembilangan. In the buoyed channel and in Jansens Channel, the maximum speeds are similar to those predicted. Near the pilot light vessel, they are somewhat weaker, and near the banks bordering the channels the speeds never exceed 1 knot. At Zwaantjes Reef, the W current begins and reaches strength about 4 hours earlier than those of the N current at Sembilangan. The E current begins and reaches strength about 4 hours earlier than those of the S current at Sembilangan.

The currents in Selat Lombok are predominantly tidal, but are influenced by the monsoon drifts from the Bali Sea to the N and from the Indian Ocean to the S.

When W winds predominate from December through March, there is a N resultant current in the strait; when E winds predominate from April through October, the resultant flow is S. Heavy rips occur frequently in the S entrance to Selat Lombok and at times they resemble surf breaking over a reef extending across the entrance. Speeds up to 6 knots have been observed in the narrow part of the strait between Nusa Penida and Lombok. In the wider N part of the strait, the maximum speed is reported to be about 4 knots, and rips are observed at times. Rips usually occur in the strait when tidal currents reverse direction.

In Selat Badung, the pattern of tidal currents is very complex. The strongest current (as much as 8 knots) sets SW and S with the ebb, when E winds predominate. With prevailing W winds, the current sets N and NE with the flood and attains speeds of 4 to 6 knots. Frequently, a current about 2.5 miles wide sets NE along the Bali coast at the same time that a current flows SW through the remainder of the strait; rips and eddies occur along the boundary between these two opposing currents.

Tidal currents in Wetar/Timor Strait are mixed. They usually have two floods and two ebbs each tidal day, with considerable inequality in the strengths and durations of successive flood and/or successive ebb currents.

Tidal currents are usually weak in the open areas and merely strengthen the non-tidal current when setting in the same direction, and weaken it when setting in the opposite direction. In the narrow channels, tidal currents are strong at times, with speeds as high as 11 knots in one locality. Tidal currents usually predominate in the coastal regions of Makassar Strait; offshore tidal currents are weak. The duration and speed of both flood and ebb are increased when setting in the same direction as the non-tidal current. In estuaries, the flood current sometimes is masked by high river discharge from heavy rains. Along the W coast of Sulawesi, tidal currents are usually less than 2 knots. Among the reefs, the currents are strong and variable. Rips, caused by opposing currents or by the wind moving against the current, are most pronounced during the West Monsoon.

Government

Baker Island.—Baker Island (0˚12'N, 176˚29'W.) is located in the North Pacific Ocean. It is uninhabited and covers an area of less than 1 square mile.

The island was claimed by the United States in 1857. An abandoned airfield is situated on the S end of the island.

The island is under the jurisdiction of the United States Fish and Wildlife Service and is declared to be a National Wildlife Refuge. The refuge extends outward to the 3-mile limit. Entry into the refuge without a permit is prohibited except in an emergency.

The climate is very hot and extremely dry. The vegetation consists of scattered herbs, grass, and low shrubs.

The terrain is low. The nearly level coral island is surrounded by a narrow fringing reef.

Guam.—Guam (13˚25'N., 144˚44'E.), an unincorporated territory of the United States, is the largest island of the Marianas Archipelago. It is located in the North Pacific Ocean. The island is of great strategic value, with large naval and air bases. It is about 30 miles long.

The climate is tropical marine, being generally warm and humid and moderated by the Northwest Trade Winds. The dry season runs from January to June and the rainy season is from July to December. There is little seasonal temperature variation.

The terrain is of volcanic origin and is surrounded by coral reefs. There are relatively flat coral limestone plateaus with steep coastal cliffs and narrow coastal plains in the N, low-rising hills in the center, and mountains in the S.

The highest point is Mount Lamlam, 407m high, in the SW.

The Time Zone description is WHISKEY (+10). Daylight Savings Time is not observed.

Howland Island.—Howland Island (0˚48'N, 176˚38'W) is located in the North Pacific Ocean, almost on the Equator, about 1,650 miles SW of Honolulu; it is uninhabited and covers an area of about 1 square mile.

The island is under the jurisdiction of the United States Fish and Wildlife Service and is declared to be a National Wildlife Refuge. The refuge extends outward to the 3-mile limit. Entry into the refuge without a permit is prohibited except in an emergency.

The climate is equatorial with little rainfall, a constant wind and a burning sun.

The terrain is low-lying, nearly level, sandy, coral-like, and surrounded by a fringing reef with a depressed central area.

Jarvis Island.—Jarvis Island (0˚23'S, 160˚01'W), a United States possession, is a small bleak coral island, about 2 square miles in extent, located in the Pacific Ocean. It is about 6m high, with large guano deposits in the interior.

In 1936, Jarvis Island was placed, for administrative purposes, under the jurisdiction of the United States Fish and Wildlife Service. The island is uninhabited and is a United States National Wildlife Refuge.

Landing is prohibited except by permit issued by the United States Fish and Wildlife Service, Kailua, Hawaii.

The climate is tropical with little rainfall, constant winds, and a burning sun.

The sandy and coral-like terrain is surrounded by a narrow fringing reef.

Johnston Atoll.—Johnston Atoll (16˚45'N, 169˚31'W), an American possession, is located in the North Pacific Ocean, almost on the Equator about 1,650 miles SW of Honolulu.

The climate is tropical but generally dry, with consistent NE trade winds and little seasonal temperature changes.

The terrain is mostly fla,t with maximum elevation of 4m.

Johnston Atoll is a Naval Defense Sea Area and Airspace Reservation. The island is closed to the general public and to unauthorized traffic and shall not be navigated within 3 miles of the atoll's perimeter. Johnston Atoll is administered from Washington, DC by Pacific Air Forces, Hickmans AFB, and the Fish and Wildlife Service of the US Department of the Interior as part of the National Wildlife Refuge system.

The Time Zone description is WHISKEY (+10). Daylight Savings Time is not observed.

Kingman Reef.—Kingman Reef (6˚25'N., 162˚26'W.), a United States possession, is located in the North Pacific Ocean about 33 miles NW of Palmyra Island. The reef is a Defensive Sea Area and Airspace Reservation and is closed to the public. The airspace entry control has been suspended, but is subject to immediate reinstatement without notice.

The uninhabited, triangular reef is about 9 miles long and 5 miles wide, sheltering a lagoon with considerable depths. It dries at LW on its NE, E, and SE sides. A small islet, 0.9m high, lies on its E side.

The climate is tropical but moderated by prevailing winds.

The terrain is low and nearly level with a maximum elevation of about 1m.

The waters within the 3-mile limit of Kingsman Reef constitute a prohibited area. No vessel, except those authorized by the Secretary of the Navy, shall be navigated in the area.

Palmyra Atoll.—Palmyra Atoll (5˚53'N., 162˚05'W.), a United States possession, is one of the northernmost of the Line Islands, located in the North Pacific Ocean about 1,000 miles S of Honolulu. Palmyra Atoll was purchased by the Nature Conservancy in 2000.

The atoll consists of many small islets lying on a barrier reef which encloses three distinct lagoons, known as West Lagoon, Center Lagoon, and East Lagoon.

The islands and islets are low, the highest being only about 1.8m high, but they are covered with coconut palms and other trees, some of which reach an elevation of as much as about 30m.

The barrier reef is reported to be about 8 miles long in an E-W direction.

The uninhabited island has an area of 4 square miles.

The airstrip, roads, and causeways built during WWII have become unserviceable and overgrown.

The climate is equatorial. It is hot and very rainy.

The terrain is low, with maximum elevations of about 2m.

Wake Island.—Wake Island (19˚18'N, 166˚33'E) is located in the North Pacific Ocean. It consists of three low-lying islets, Wilkes Island, Peale Island, and Wake Island, which form a horseshoe shape on the reef. It is separated by narrow, shallow channels and encloses a lagoon, 4.5 miles long and 2 miles wide.

The climate is tropical.

The coral-like terrain is built up on an underwater volcano.

The restrictions imposed upon the entry into Wake Island Naval Defensive Sea Area have been suspended, except for the entry of foreign flag vessels and foreign nationals. The restrictions may be reimposed without notice at any time. Wake Island is an unincorporated territory of the U.S., administered from Washington, DC by the Department of the Interior; activities on the island are managed by the U.S. Army under a U.S. Air Force permit.

Wake Island is claimed by the Marshall Islands.

The Time Zone description is MIKE (-12). Daylight Savings Time is not observed.

Ice

South Pacific Ocean

Drift Ice.—The N limit of drift ice is generally between 45˚S and 50˚S, except during autumn, when it is seldom N of

50˚S. In the E part of the ocean off the coast of Chile the drift ice limits are suppressed to around 55˚S. The drift ice limit is also pushed S in the vicinity of New Zealand. The extreme N boundary of drift ice is about 40˚S to 41˚S, E of New Zealand between l65˚W and 180˚W.

Sea Ice.—The extreme N limit of pack ice (concentrations greater than 1/8) is about 57˚S from 138˚W to 151˚W during some years from mid-August to mid-September. At other times and places, the pack ice boundary is usually S of 60˚S.

Mined Areas

Mine fields were laid in many parts of the world during World War II. Many of these mine fields have been swept; others have had routes swept through them. These routes are mostly marked by buoys and have been used safely by shipping for many years.

Due to the lapse of time, navigation through these minefields whether they have been swept or not is now considered no more dangerous from mines than from any other of the usual hazards to navigation, but in the unswept areas a real danger still exists with regard to anchoring, fishing, or any form of submarine or seabed activity. Furthermore, uncharted wrecks and shoals may lie in these areas.

Even in swept waters and routes there is a remote risk that mines may still remain, having failed to respond to orthodox sweeping methods.

Mariners are therefore advised only to anchor in port approaches and established anchorages. In an emergency it is better to anchor in a swept route rather than in unswept waters.

Drifting mines may occasionally be sighted. All drifting mines should be reported immediately to the naval authorities via the coast radio station. The time of sighting and position of the mine is important in the reporting information so that an appropriate warning to other ships can be broadcast. A drifting mine is best left for the naval experts to deal with.

Rifle fire could pierce the casing and sink the mine without causing it to explode. It will then, if it is near the coast, get washed up on a beach or end up in a trawl in a still lethal state.

Mines, torpedoes, depth charges, bombs, and other explosive missiles are sometimes picked up in trawls, often in waters comparatively distant from New Zealand. Explosive weapons are dangerous even if they have been in the water for many years, and the following guidance is given:

1. A suspected explosive weapon should not be landed on deck if it has been observed while the trawl is still outboard. The trawl should be lowered and where possible towed clear of regular fishing grounds before cutting away the net as necessary. The position and depth of water where the mine was cut away should be passed to the naval authorities via the coast radio station.
2. In the event of the weapon not being detected until the contents of the trawl have been discharged on deck, the master of the fishing vessel must decide whether to rid his ship of the weapon by passing it over the side or to make for the nearest port informing the naval authority via the coast radio station without delay. His decision will depend on the circumstances, but he should be guided by the following points:
   a. Care should be taken to avoid bumping the weapon.
   b. If retained onboard it should be stowed on deck, away from heat and vibration, firmly chocked, and lashed to prevent movement.
   c. It should be kept covered up and damped down. (This is important because any explosive which may have become exposed to the atmosphere is liable to become very sensitive to shock if allowed to dry out.)
   d. The weapon should be kept onboard for as short a time as possible.
   e. If within 2 or 3 hours steaming of the coastline, the safest measure will generally be to run towards the nearest port and lie a safe distance offshore to await the arrival of a bomb disposal unit. Under no circumstances should the vessel bring the mine or weapon into harbor.

Under no circumstances should attempts be made to clean the weapon for identification purposes, open it, or tamper with it in any way.

A ship with an explosive weapon onboard, or in its gear, should warn other ships in the vicinity giving its position and, if applicable, intended position of jettison.

Remoored mines which have drifted in from deeper water trailing a length of cable are likely to become dangerous should the cable foul some obstruction on the bottom. In this case the mine may not appear on the surface at all states of the tide. Such mines should be reported as drifting mines.

Under no circumstances should an attempt be made to recover a mine and bring it to port, and rewards formerly paid to mariners for such recovery have been discontinued.

Navigational Information

Enroute Volumes

Pub. 125, Sailing Directions (Enroute) West Coast of South America.

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Pub. 127, Sailing Directions (Enroute) East Coast of Australia and New Zealand.

Pub. 153, Sailing Directions (Enroute) West Coast of Central America.

Pub. 154, Sailing Directions (Enroute) British Columbia.

Pub. 155, Sailing Directions (Enroute) East Coast of Russia.

Pub. 157, Sailing Directions (Enroute) Coasts of China and Korea.

Pub. 158, Sailing Directions (Enroute) Japan, Volume 1.

Pub. 159, Sailing Directions (Enroute) Japan, Volume 2.

Pub. 161, Sailing Directions (Enroute) South China Sea and the Gulf of Thailand.

Pub. 162, Sailing Directions (Enroute) Philippine Islands.

Pub. 163, Sailing Directions (Enroute) Borneo, Jawa, Sulawesi, and Nusa Tenggara.

Pub. 164, Sailing Directions (Enroute) New Guinea.

International Ship and Port Facility (ISPS) Code

The ISPS Code applies to ships on international voyages and port facilities directly interfacing with these ships. All vessels should fully comply with the provisions of Chapter XI-Part 2 of the SOLAS Convention and Part A of the ISPS Code. Vessels shall demonstrate that appropriate maritime security measures are in place according to ISPS Code regulations. The following information must be furnished by the vessel when requested:

1. Information on the vessel and making contact.
   1.1 IMO Number
   1.2 Vessel name.
   1.3 Home port.
   1.4 Flag.
   1.5 Vessel type.
   1.6 Call sign.
   1.7 INMARSAT call sign.
   1.8 Gross tonnage.
   1.9 Company name.
   1.10 Name of Company Security Officer, including 24-hour contact information.
2. Information about the harbor and harbor facilities.
   2.1 Arrival harbor and harbor facilities where the vessel will berth.
   2.2 Date and time of arrival.
   2.3 Primary reason for entering the harbor.
3. Information required by Rule 9 Paragraph 2.1 of Chapter XI-2 of the Enclosure to the SOLAS Agreement.
   3.1 Does the vessel posses an International Ship Security Certificate (ISSC) or an Interim ISSC? (Yes/No)
      3.1.1 If yes, list issuer of ISSC or Interim ISSC and expiration date.
      3.1.2 If no, give reason why not.
      3.1.3 Is there an approved Vessel Security Plan? (Yes/No).
   3.2 Current MARSEC Level of the vessel and position of vessel at the time of providing the report.
   3.3 The last ten port calls where there was interaction between the vessel and a harbor facility, in chronological order, with the most recent port call listed first. Include the MARSEC Level of the vessel, as well as the harbor name, country, harbor facility, and UN Location Code.
      3.3.1 During the previous ten port calls, were additional security measures taken on board the vessel in addition to the measures required by the vessel's MARSEC Level. (Yes/No).
      3.3.2 If yes, please detail the additional security measures taken. Include the harbor name, country, harbor facility, and UN Location Code.
   3.4 Within the period of the last ten calls at port facilities, list ship-to-ship activities, including position or latitude/longitude of the activities, with the most recent activity listed first.
      3.4.1 Were proper security measures taken by the vessel during the ship-to-ship activities? (Yes/No).
      3.4.2 If no, list the ship-to-ship activities where proper security measures were not taken and describe the security measures that were taken.
   3.5 General description of the cargo on board.
   3.6 A copy of the crew list
   3.7 A copy of the passenger list.
4. Other safety-related information.
   4.1 Are there any other safety-related matters to be reported (Yes/No).
   4.2 If yes, provide more detailed information.
5. Agents of the ship in future ports of arrival.
   5.1 Name(s) of ship's agent(s) in future ports of arrival including contact information (telephone number).
6. Identification of the person who prepared the information.
   6.1 Name.
   6.2 Title or function.
   6.3 Signature, including date and location of preparation.

Electronic Navigation and Communication

International Maritime Satellite Organization (INMARSAT).—Around the world satellite communication systems have now become synonymous with the reliable and quality transfer of information. The International Maritime Satellite Organization (INMARSAT) is an international consortium comprising over 75 partners who provide maritime safety management and maritime communications services.

The INMARSAT system consists of a number of satellites, which maintain geosynchronous orbits, and provide quality communications coverage between about 77˚N and about 77˚S, including locations with less than a 5˚ angle of elevation. INMARSAT-A, the original system, provides telephone, telex, and fax services. However, this system is being replaced by INMARSAT-B, which, by the use of digital technology, is providing the services with improved quality and higher data transmission rates. INMARSAT-C provides a store and forward data messaging capability, but no voice communication.

Global Maritime Distress and Safety System (GMDSS).—The Global Maritime Distress and Safety System (GMDSS) provides a great advancement in safety over the previous usage of short range and high seas radio transmissions. This system consists of satellite as well as advanced terrestrial communications operations.

The GMDSS has been adopted by the International Convention for the Safety of Life at Sea (SOLAS) 1974. It applies to cargo vessels of 300 grt and over, and all vessels carrying more than twelve passengers on international voyages. Unlike previous regulations, the GMDSS requires vessels to carry specified equipment according to the area in which they are operating. Such vessels navigating in polar regions must carry VHF, MF, and HF equipment and a satellite Emergency Position Indicating Radiobeacon (EPIRB).

Information on the GMDSS, provided by the U.S. Coast Guard Navigation Center, is accessible via the Internet, as follows:

U. S. Coast Guard Navigation Center

http://www.navcen.uscg.mil/marcomms/default.htm

Global Positioning System (GPS).—The NAVSTAR Global Positioning System (GPS) is a satellite-based system, operated by the United States Air Force, which provides very accurate positioning, time, and velocity information to multiple users. It is an all-weather system with world wide and contiuous usage which will replace OMEGA and other such hyperbolic radio navigation systems. The space component of GPS consists of 24 satellites, of which a minimum of six are observable from any place on earth. GPS receivers convert data from the satellites to produce three-dimensional positions (latitude, longitude, and altitude). They compute information for fixes in terms of the World Geodetic System reference ellipsoid. A datum shift correction may be required before a position can be plotted.

GPS provides two services for navigation positioning, as follows:

1. Standard Positioning Service (SPS)—The standard level of positioning and timing accuracy. It is available without restrictions to any user on a continuous worldwide basis. As of midnight (EDT) 1 March 2000, Selective Availability was set to zero; users should experience a GPS horizontal accuract of 10 to 20m or better.

2. Precise Positioning Service (PPS)—An encoded level intended for use by the Department of Defense.

SafetyNET.—NAVTEX is an international automated direct printing service for providing coastal navigational information, distress warnings, and meteorological warnings, including ice reports.

It is an element of GMDSS and has replaced the broadcasts of safety information over MF morse frequencies.

The SafetyNET broadcast system provides the same information as NAVTEX to vessels on the high seas and is delivered by the INMARSAT-C system.

Note.—For further information concerning the International Maritime Satellite Organization (INMARSAT), the Global Maritime Distress and Safety System (GMDSS), the SafetyNET system, and the Global Positioning System (GPS), see Pub. No. 9, The American Practical Navigator (Bowditch, 1995 Edition); Pub. 117, Radio Navigational Aids; and Annual Notice to Mariners No. 1.

Pollution

Single-hull Tanker Phase-out Schedule

In accordance with Regulation 13G of Annex I of the MARPOL Convention, single-hull tankers should be phased out or converted to a double-hull configuration according to a schedule based on their year of delivery. These requirements are designed to reduce the risk of oil spills from tankers involved in low-energy collisions or groundings.

The types of vessels affected by these regulations and their phase-out schedule is, as follows:

1. **Category 1—**Commonly known as Pre-MARPOL Tankers, consists of the following types of vessels:

a. Tankers of 20,000 dwt and over carrying crude oil, fuel oil, heavy diesel oil, or lubricating oil as cargo.

b. Tankers of 30,000 dwt and over carrying other oils, which do not comply with the requirements for protectively-located segregated ballast tanks.

The phase out schedule for Category 1 vessels is, as follows:

a. Vessels delivered on or before 5 April 1982—not allowed to trade after 5 April 2005.

b. Vessels delivered after 5 April 1982—not allowed to trade after the anniversary date, in 2005, of their delivery date.

2. **Category 2—**Commonly known as MARPOL Tankers, consists of the following types of vessels:

a. Tankers of 20,000 dwt and over carrying crude oil, fuel oil, heavy diesel oil, or lubricating oil as cargo, which comply with the MARPOL requirements for protectively-located segregated ballast tanks.

b. Tankers of 30,000 dwt and over carrying other oils, which comply with the MARPOL requirements for protectively-located segregated ballast tanks.

The phase out schedule for Category 2 vessels is, as follows:

a. 5 April 2005 for vessels delivered on 5 April 1977 or earlier.

b. Anniversary date in 2005 for vessels delivered after 5 April 1977 but before 1 January 1978

c. Anniversary date in 2006 for vessels delivered in 1978 and 1979.

d. Anniversary date in 2007 for vessels delivered in 1980 and 1981.

e. Anniversary date in 2008 for vessels delivered in 1982.

f. Anniversary date in 2009 for vessels delivered in 1983.

g. Anniversary date in 2010 for vessels delivered in 1984 or later.

3. **Category 3—**Consists of tankers 5,000 dwt and over but less than the tonnage specified for Category 1 and Category 2 vessels.

The phase out schedule for Category 3 vessels is, as follows:

a. 5 April 2005 for vessels delivered on 5 April 1977 or earlier.

b. Anniversary date in 2005 for vessels delivered after 5 April 1977 but before 1 January 1978

c. Anniversary date in 2006 for vessels delivered in 1978 and 1979.

d. Anniversary date in 2007 for vessels delivered in 1980 and 1981.

e. Anniversary date in 2008 for vessels delivered in 1982.

f. Anniversary date in 2009 for vessels delivered in 1983.

g. Anniversary date in 2010 for vessels delivered in 1984 or later.

Single-hull tankers of 5,000 dwt and over are prohibited from carrying heavy grade oil (HGO) after 5 April 2005. Single-hull tankers of 600 dwt and over but less than 5,000 dwt are prohibited from carrying HGO after the anniversary of their delivery date in 2008.

Seas

Adjacent Seas in the North Pacific Ocean

The seas adjacent to the North Pacific Ocean include the Gulf of Alaska, the Bering Sea, the Sea of Okhotsk, the Sea of Japan, the Yellow Sea, the East China Sea, the South China Sea, and the Philippine Sea, and the Tasman Sea.

The Gulf of Alaska.—The broad indentation on the S coast of Alaska, between the Alaskan Peninsula on the W and the Alexander Archipelago on the E, is comprised of a seamount province and a number of guyots.

The Gulf of Alaska is reported to be frequently rough and to usually have some swell. It is a stormy region in February and November and mountainous seas may be expected.

The Bering Sea.—The coast along the Siberian side of the Bering Sea is steep-to, and the tidal currents are not strong, but navigation is not easy because of severe climatic conditions, frequent fog and overcast skies, strong winds, short navigational seasons, and the inaccuracy of some existing charts. Some of the surveys on this side date back to examinations by

Admiral Litke of the Russian Navy in 1826. Reka Anadyr, flowing into Anadyrskiy Zaliv (Gulf of Anadyr), is the only large river on the Siberian side of the Bering Sea.

The hydrography of the E side of the Bering Sea is fairly well known, but that of the Asiatic side is imperfectly known demanding special caution on the part of the navigator.

The NE part of the sea has one of the largest continental shelves in the world but along the Aleutian chain and the Siberian shore it is very narrow.

The W, S, and SE shores of the Bering Sea abound with volcanoes. Many are active, producing earthquakes and changes in the features of the land. The highest on the W shore is Sopka Klyuchevskaya (56˚03'N., 160˚35'E.) rising on the E coast of Poluostrov Kamchatskiy.

Komandorskiye Ostrova, lying NW of the Aleutian Islands, forming the S and SE shores of the sea, has no active volcanoes but earthquakes are frequent. These earthquakes are sometimes prolonged and accompanied by a sudden rise in the water level of as much as 3m and over; the level falls again just as suddenly; this fact should be borne in mind when selecting an anchorage.

The Sea of Okhotsk.—The Sea of Okhotsk, about 1,350 miles in length in a N to S direction and 660 miles in width, is bounded on the SW by Sakhalin, on the W and N by the Asiatic mainland, on the E by Poluostrov Kamchatskiy, and on the S by the Kuril Islands and Hokkaido.

Navigation in the Sea of Okhotsk is difficult during the navigation season because of frequent fog and lack of navigational aids. Vessels should bear in mind that a number of features on the shores may be incorrectly charted, a number of temporary settlements may spring up during the fishing season, and the channels and bars at the river mouths may change.

During the winter all ports are icebound and ice exists in most of the open sea area.

The greatest depths in the Sea of Okhotsk, from 3,000m to a maximum of 3,374m are found in the Kuril Basin along the NW side of the Kuril Islands. From this area the bottom rises rather abruptly toward Sakhalin and the W coast of Poluostrov Kamchatskiy, but more gradually toward the N part of the sea.

In places along the N and NW shores depths of 73 to 92m are found close inshore. The shallowest parts of the sea are along the W coast of Poluostrov Kamchatskiy and at the heads of bays.

The most intense volcanic and seismic activity is concentrated in the Kuril Islands area where about 30 surface and some active submarine volcanoes are found. The strongest earthquakes are concentrated in the Kuril Islands area; weaker earthquakes are observed on Sakhalin and on the N shore. The NW part of the sea has a minimum of seismic activity.

The Sea of Japan.—The Sea of Japan lies between the islands of Japan on the E, Korea on the W, and Soviet Union to the N, where Tatar Strait leads to the Sea of Okhotsk. The Sea of Japan is nearly elliptical in outline in a NE to SW direction. Several islands lie within its margins. A maximum depth of 4,049m found at position 43˚00'N, 137˚39'E.

The islands of Japan are mountainous. Three main ranges form an arc, with one range extending S from Sakhalin; one running NE from China, through Kyushu and Shikoku; and the third rising parallel with and N of the second. These three ranges join about the middle of Honshu, where they form a range known as the Japanese Alps and include a volcanic chain. The maximum elevation in Japan is attained at the summit of Fuji San (Fuji Yama), which is 3,775m high. It surmounts a weather station.

The S coast of Japan is quite broken, affording a great number of sheltered anchorages; but much of the E and W coasts of Honshu and Hokkaido are slightly indented, with few good harbors. The great natural feature is the Naikai (Inland Sea), bounded by Honshu on the N and by Kyushu and Shikoku on the S, affording a safe sheltered waterway between Kobe and Shimonoseki.

The peninsula of Korea is mountainous, sloping towards the W coast which is indented with several harbors, sheltered by some islands, but somewhat hampered by the large tidal rise and strong tidal currents. The E coast has few harbors.

The Yellow Sea.—The Yellow Sea lies between Korea and N China. It is one of the marginal seas of the W Pacific lying N of, and adjacent to, the East China Sea. The gulf of Po Hai is at its head.

Large quantities of fine yellow mud are carried down to this sea by the great rivers of North China. They are the Huang Ho (Yellow River), Chang Chiang (Yangtze River), Liao Ho, and the Yalu River.

The N of China is characterized by a yellow earthy deposit of great fertility, called “loess,” which fills the valleys to a depth of thousands of feet and covers both low and high ground. It is apt to erode to form terraced precipices. It is soft and easily washed away from the banks of the rivers, so that the rivers change their course frequently and their beds are encumbered by shoals.

The East China Sea.—The East China Sea lies between the Ryukyu Islands (Nansei Shoto) archipelago and the mainland of China. The mainland coast is low with large offshore mud shoals of silt brought down by the Chang Chiang (Yangtze River) annually in amounts comparable to the discharge of the Mississippi River. The Chang Chiang is over 3,000 miles long. The head of river steamer navigation, at high river level, is Chungking (29˚34'N., 106˚35'E.), about 1,300 miles above Wu-sung Bar.

The main axis of the Kuroshio (Japan Current) or Black Current, so-named by the Japanese because of the dark blue color of its water, passes through the East China Sea, close W of the Ryukyu Islands.

Like the Gulf Stream, it carries large quantities of warm tropical water to higher latitudes.

The South China Sea.—The South China Sea extends from Taiwan to Bangka. It provides a direct connection between the North Pacific Ocean and the Indian Ocean.

The sea is about 2,000 miles in length with the Gulf of Thailand as a marginal body of water. Dangerous Ground, a large encumbered area lying W of Palawan, should be avoided by all vessels and is described in Pub. 161, Sailing Directions (Enroute) for the South China Sea and Gulf of Thailand.

In the S part depths do not exceed 183m. The N central part has a maximum depth of 5,030m.

In the deep waters off the Sunda Shelf the seabed is floored with soft mud or ooze, providing a smooth sedimentary surface layer. The depth of the layer is not known, but is probably similar to that of the Pacific Ocean, which is estimated to be about 300m. Patches of sand, coral, and rock surround the reefs and banks in this region.

On the shelf mud is still the dominant sediment, but is interspersed with large patches of sand and smaller patches of rocks, stone, and coral. A belt of sand, about 100 miles wide, extends N from Kepulauan Natuna to the Vietnam coast.

There is a widening belt of sand and mud off the coast of Sarawak and the NW extremity of Borneo. This belt extends NW to the S group of Kepulauan Natuna. There is an extensive mud strip inshore of this belt along the W coast of Sarawak, formed by the discharge of rivers. Mud is extensive off the coast of West Kalimantan, but is replaced in the approaches to Selat Karimata by a predominantly sand bottom.

A mud flooring extends along the NW coast of Borneo and E through Balabac Strait, with offshore patches of rock and coral. The bottom is sand with frequent outcrops of rock and coral along the W coast of Palawan. The bottom is mud in the Palawan Passage.

At the entrance to Manila Bay and along the S shore of that bay, sand, stone, and rock are present but elsewhere, mud from deltaic deposition is found. Mud is also predominant N of Mindoro, but S of that island the bottom is sand, interspersed with patches of coral.

The steep coast W of Luzon and N of Manila Bay is fronted by rocky outcrops, islets, and occasional coral reefs.

The narrow coastal shelf is covered by sand or sand and mud, with mud becoming the predominant sediment between latitudes 16˚N and 18˚N. The climate of the South China Sea is governed by the NE and SW monsoons and results in a slow and regular climatic variation.

The occurrence of tropical cyclones also varies with the seasons.

The principal islands and island groups of the South China Sea are, as follows:

1. On the E—the Philippines and Borneo.
2. In the middle—the Paracel Islands (Xisha Qundao).
3. On the W—Hong Kong and Hai-nan Tao.
4. On the S—Kepulauan Natuna, Kepulauan Anambas, Singapore, Bangka, and Belitung.

The Philippine Sea.—The Philippine Sea is a vast area lying S of Japan and N of the Caroline Islands between the Philippines on the W, and the island chain of Palau and the Marianas on the E.

The Mindanao Trench, a narrow trough containing some of the greatest depths in the oceans, lies close to the E coasts of the Philippine archipelago.

Its limits are as yet not fully defined but it appears to be about 600 miles long with a width of from 60 to 100 miles, and extends from off the S end of Mindanao to beyond the N point of Samar. In 1952, H.M.S. Challenger obtained a depth of 10,863m in the trench.

The most striking feature of the E part of the Philippine Sea are chains of seamounts running in a N to S direction. The main island arcs lie in two groups. They are the Solomon Islands and Bismarck Archipelago, lying off New Guinea; and the Marianas.

The Marina Trench is over 1,000 miles long, with an average width of about 40 miles. Near its S end some of the deepest recorded soundings have been obtained. These include a depth of 11,035m found by the research vessel Vityaz in 1959.

Adjacent Seas in the South Pacific Ocean

The seas adjacent to the South Pacific Ocean include the Celebes Sea, the Arafura Sea, the Banda Sea, the Java Sea, the Coral Sea, the Solomon Sea, and the Bismarck Sea.

The Celebes Sea.—The Celebes Sea lies between Borneo and the S part of the Philippines. It is bounded on the N by the Sulu Archipelago and the SW coast of Mindanao; on the E by the chain of volcanic islands connecting the Philippines with Sulawesi; and on the S by the partially volcanic N arm of Sulawesi.

An active submarine volcano rises from a depth of about 4,000m at about 4˚N, 124˚E. Otherwise, the basin is characterized by a rather flat bottom with steep sides.

The bottom in the vicinity of active volcanoes is covered with blue or green mud.

Islands and island groups of the Celebes Sea include; on the N, the Sulu Archipelago and Mindanao; on the E, Kepulauan Kawio and Kepulauan Sangihe; on the S, Sulawesi; and on the W, Borneo.

The Arafura Sea.—The Arafura Sea lies between the SW coast of New Guinea and the N coast of Australia. Weak to moderate earthquakes occur in the vicinity of Kepulauan Kai on the W limit of this sea.

The Banda Sea.—The Banda Sea lies between Sulawesi and the Tanimbar Islands. The Banda Sea consists of several comparatively flat basins. The volcano, Gunungapi, rises abruptly in the S basin from a depth of about 4,500m to a height of about 280m. The area has a high frequency of earthquakes and volcanic eruptions.

Pulau Unauna erupted on 18 July 1983. Although all the inhabitants were evacuated prior to the eruption, all of the flora and fauna of the island was reported to have perished.

The Java Sea.—The Java Sea lies between Borneo and Java. In the E, the Java Sea is bounded by the Makassar Strait, the Flores Sea, and the Bali Sea. The W boundary of the Java Sea is formed by Sumatera, as far as Bangka.

The area is seismically active, with the greatest concentration of volcanic activity in the world. One of the most catastrophic eruptions ever witnessed occurred in Selat Sunda, at Krakatau.

Prior to 1883, Krakatau was an island lying athwart a crater about 4 miles across, technically known as a “caldera.” Most of the caldera was underwater, but higher portions of the rim projected above water and successive eruptions had merged volcanic cones across the caldera to form the single island, Krakatau, 8 km by 5 km in extent. Prior to 1883, the only eruption had occurred in 1680. On May 20, 1883, Krakatau again became active. Ash-laden steam clouds reached a height of 6 miles, accompanied by earthquakes and explosions which were felt as far away as Jakarta. Moderate activity continued until the latter part of August.

On August 26, 1883, the character of the eruptions on Krakatau became catastrophic. At 1300, the first of a series of violent explosions occurred, and a black cloud of ash rose 17 miles above the island. The explosions became more and more violent during the night, reaching a climax at 1000 on August 27. The explosions of that eruption were heard as far as Australia, Sri Lanka, and Mauritius. A succession of seismic sea waves swept the shores of Selat Sunda, completely destroying five towns. The tsunami increased greatly in volume and was observed at Pulau Tampurung to rise to 22m; at Pulau Merak,

to 36.5m; and from Tanjung Tua to Telukbetung the average height was 24.5m. Every object on the shores of Selat Sunda as far inland as the first range of hills was leveled to the ground, and where the land was low, the sea penetrated as far as 5 miles inland. According to the official report 36,417 persons perished.

Large quantities of ash fell over an area of 300,000 square miles. Rising high into the upper atmosphere, the fine dust drifted several times around the earth.

When the eruption was over, about 75 per cent of Krakatau had disappeared leaving only the islet Pulau Rakata (Pulau Krakatau). Pulau Rakata has an active volcano, Gunung Rakata (6˚09'S., 105˚26'E.), 813m high.

In 1928, Pulau Anak Krakatau, an islet formed by submarine volcanic activity in the former caldera of Krakatau which is charted as a dangerous area, appeared about 2.5 miles N of Pulau Rakata. Subsequent eruptions increased the height of Pulau Anak Krakatau to 155m.

Volcanic activity was observed on Pulau Anak Krakatau in 1959, and on Pulau Rakata in 1973. In the event of threatened eruption of Gunung Rakata, the Jakarta radio station will broadcast the necessary warning in Indonesian and English.

In 1977, a massive earthquake on the Indian Ocean floor was reported. A tsunamic wave about 30m high devastated Sumbawa, destroying the village of Ai Kaptapang.

Java Sea depths vary from about 40m or less in the W part, to as much as 60m in the E part. A gently sloping bottom, covered with a layer of unconsolidated sediment (soft mud or in some places mud and sand), has rocky outcrops (predominantly granite) rising abruptly to form groups of islands or shoals.

In some parts, chiefly along the coasts of Borneo, Sumatera, and Java, large rivers flow into the sea causing inshore silting and extension seaward of the coasts. The water is too muddy, or too fresh, for the growth of coral; but elsewhere the reefs and shores are generally encrusted with coral.

Some extensive coral areas occur near Kepulauan Seribu, NW of Jakarta, and in the vicinity of Bangka and Pulau Belitung. In some shallower parts, chiefly in the vicinity of island groups and on the sills which separate South China Sea from Java Sea, there are large stretches of sandy bottom. These are chiefly areas where the tidal currents are relatively strong. In some places off Tanjung Sambar, the SW extremity of Borneo, and in Selat Bangka, there are elongated sand banks aligned with the direction of the tidal currents, with muddy channels between them.

The largest stony area is in the narrows of Selat Sunda, while the largest area of rocky bottom appears to be the reef extending S from Benkulu, the SW extremity of Sumatera.

However, the central part of the Java Sea has not been closely examined. The area N of Kepulauan Kangean as far as 6˚20'S has extensive foul areas due to coral growth and numerous isolated detached patches. It is prudent to adhere to the well-established routes. See the principal descriptions of these localities in the appropriate Sailing Directions (Enroute).

The Coral Sea.—The Coral Sea lies between the SE coast of New Guinea and the Queensland coast of Australia. It includes Torres Strait and extends as far E as the New Hebrides.

The area is characterized by large coral atolls and the world's largest barrier reefs including the Great Barrier Reef of Australia, the Tagula Barrier Reef of the Louisiade Archipelago, and the New Caledonia Barrier Reef.

Bathymetrically, the E margin of the Coral Sea is notable for its great trenches, including the San Cristobal Trench, the Torres Trench, and the New Hebrides Trench.

The Solomon Sea.—The Solomon Sea, N of the Coral Sea, lies E of New Guinea and S of New Britain and the Solomon Islands. The area is seismically active. There are active volcanoes on some of the islands. Coral reefs abound.

Solomon Basin (Planet Deep), in the New Britain Trench, has a depth of 9,140m.

Tropical storms tend to be generated in the S part of the area and move S into the Coral Sea.

The Bismarck Sea.—The Bismarck Sea, part of the SW Pacific Ocean, lies between the N coast of New Guinea and the Bismarck Archipelago.

The area is characterized by numerous seismic disturbances, active volcanoes, and inactive cones. There are numerous sea mounts and submarine volcanoes.

Tides

SOUTH PACIFIC OCEAN

General.—The mean tide range varies from less than 0.6m in many of the Pacific Islands to over 4.2m between 42˚S and 43˚S along the coast of Chile.

Northern South Pacific Ocean

North of 6˚S, the tide is mainly mixed, consisting of two high waters and two low waters each tidal day, with a marked inequality between the heights of successive high and successive low waters. Maximum (spring) tides are 1.5 to 3.0m generally and in excess of 4.9m in some places in the Gulf of Panama.

Eastern South Pacific Ocean

South of 6˚S, the tide is mainly mixed, consisting of two high waters and two low waters each tidal day, with a marked inequality between the heights of successive high and successive low waters. Between 40˚S and 46˚S, the tide is semidiurnal; two high and two low waters occur each tidal day, with little inequality between successive highs and lows. Maximum (spring) tide ranges are 0.6 to 1.2m in Peru and 0.9 to 2.1m in Chile, except from 41˚S to 43˚S in the Gulf of Corcorado and the Gulf of Ancud, where spring ranges of 4.6 to 6.1m may be experienced.

Western South Pacific Ocean

Semidiurnal tides occur throughout New Zealand, its neighboring islands, and Samoa. Tides at Pacific islands W of 130˚W and N of 30˚S are mixed, except in the Solomon Islands, where they are mainly diurnal (one high water and one low water daily).

In New Zealand, tide ranges are generally larger on the W coasts than along the E coasts. Spring ranges are generally 2.1 to 3.4m along the W coasts and 1.2 to 2.1 along the E coasts, although exceptions may be found in constricted passages or inlets. The smallest tide occurs at Wellington, where the spring range is slightly greater than 1m and the mean range is slightly less than 1m. The largest tide is found in Astrolabe Road, where the spring range is 4.7m and the mean range 3.7m.

NORTH PACIFIC OCEAN

General.—Semidiurnal tides (two high and two low waters each tidal day), mixed tides (two markedly unequal high waters and/or two markedly unequal low waters each tidal day), and diurnal tides (one high water and one low water each tidal day) occur in this area. Prolonged onshore winds and/or low atmospheric pressure tend to raise the water level; offshore winds and/or high atmospheric pressure tend to lower it.

The tides are extremely mixed along the coast and in the channels among the many islands of British Columbia. The mean diurnal tide ranges generally vary from about 1.8 to 3.5m.

Mixed tides predominate over the greater part of the Central American coast; the large tide ranges of 1.8 to 4.9m usually occur 3 or 4 days after the time of new or full moon.

Mean tide ranges in the northwest Pacific Ocean vary from less than 0.3m in the Sea of Japan to more than 9.1m in the Sea of Okhotsk. Large fluctuations in water level due to winds may occur along the west coast of the Kamchatka Peninsula.

Along the coast of China, the tides are generally mixed with inequalities between heights of successive high and/or successive low waters. Mean spring range is almost 5.8m off the SE coast of China, about 3.1m on the SE coast of the Shantung Peninsula, about 1.2m in Bo Hai, and over 8.2m at some locations on the W coast of Korea. Tides along the Pacific coast of Japan vary from about 0.8 to 2.3m, but at some places in the Naikai they may exceed 3.1m.

Northeastern North Pacific Ocean

The tides are extremely mixed along the coast and in the channels among the many islands of British Columbia. The greatest diurnal inequality (difference in height between two successive high and/or two successive low waters) occurs principally between successive low waters during maximum N and S declinations of the moon; the least inequality occurs when the moon is over the Equator. Different combinations of lunar declination and lunar phases affect the tides in varying degrees. For example, in some places highest tides can occur 5 or 6 days before or after new or full moon.

The daily higher high water occurs near the time of the moon's lower transit during N declination, and occurs near the time of the moon's upper transit during S declination; the lower low water follows the higher high water. Extreme meteorological conditions may increase heights as much as 50 per cent.

The tidal progression is n. In many of the deep inlets the tide rises or falls nearly simultaneously along the entire length of the inlet; high tide (or low tide) occurs only slightly later at the head than at the entrance.

Water levels along the mainland may be increased by runoff and river discharge, which are maximum in May and June when the mountain snow melts. The discharge of the smaller rivers on coastal islands is greatest in winter, the period of maximum coastal precipitation. Thus, the influence of the large rivers is greatest in summer and that of the small rivers is greatest in winter.

The mean diurnal tide range gradually increases NW along the W coast of Vancouver Island from about 2.2m at Port San Juan, near the entrance to the NW end of the island.

In the Strait of Juan de Fuca and the Inner Passage where deep channels between the mainland and Vancouver Island extend from Cape Flattery to Queen Charlotte Sound, the tides are, as follows:

1. Strait of Juan de Fuca—The mean diurnal range is about 2.2m. High water occurs about 4 hours earlier at Cape Flattery than at Port Townsend. The average inequality between the two daily low waters is about 0.9m at Cape Flattery; this difference in low water heights increases E to about 1.5m at Port Townsend. An average inequality of about 0.5m between the two daily high waters, however, remains nearly uniform through the entire length of the strait.
2. Victoria—The mean diurnal range is about 1.8m. For periods of a few days during each month, the tide may be diurnal, with only one high and one low water daily.
3. San Juan Archipelago—The mean diurnal ranges differ from about 2.2 to 2.6m. An extreme range of tide, from, 1.4m below to 3.7m above chart datum (mean lower low water), may occur at times.
4. Strait of Georgia—The mean diurnal range is about 2.9m in the S part and about 3.2m in the N part. A maximum range of about 4.9m may occur. The difference in heights of the daily high waters is small, but the difference in heights of the successive daily low waters is considerable.
5. Queen Charlotte Strait—The mean diurnal ranges vary in height from about 3.5m at the W entrance to about 2.9m near its E limit.
6. Queen Charlotte Sound—The mean diurnal ranges are about 3.4 to 3.7m.
7. Hecate Strait—The mean diurnal ranges in vary from about 3.7m at the S entrance to approximately 18.!12 feet in the N part of the strait. The tide range in the N part of the strait at times may exceed 6.1m and have considerable diurnal inequality between low waters.
8. Dixon Entrance—The mean diurnal range is about 3.4m.

Tidal progression continues N from Queen Charlotte Sound along the mainland coast and both coasts of the Queen Charlotte Islands. Part of the progression turns E through Dixon Entrance, near the N end of Hecate Strait, and meets the N progression through Hecate Strait.

In this area the range of the tide varies from 4.9m in Queen Charlotte Sound to 7.6m at Prince Rupert.

The reference level from which tide ranges are measured is approximate lowest normal tide. This Canadian chart datum varies by 0.6 to 0.75m below mean lower low water, the chart datum used in U.S. territory.

Southeastern North Pacific Ocean (including the W coasts of Central America and Mexico)

Although mixed tides predominate over the greater part of the coast, semidiurnal tides predominate S of the vicinity of Salina Cruz.

The largest ranges of the semidiurnal tides will usually occur 3 or 4 days after new or full moon. Diurnal tide ranges are largest near maximum lunar declination. Tide ranges along the coast of Mexico vary from more than 2.1m on the N coast, to less than 0.6mon the central coast, and to more than 1.5m on the S coast.

In the Golfo de California, the tide becomes diurnal, with one high water and one low water occur daily during 10 to 15 days each month near the times of maximum lunar declination. During the remainder of the month, there will be two high

waters and two low waters each tidal day, with diurnal inequality principally in the low waters. Tide ranges decrease from 1.2m at the entrance to less than 0.9m in the central part, and then increase to approximately 7.0m at the head of the gulf. There is a bore in the Colorado River above Punta San Felipe, which is reported to be 1.2 to 2.1m in height at spring tide.

Off the coast of Central America tide ranges vary from about 1.8m at Guatemala to over 4.9mt in the Gulf of Panama.

Northwestern North Pacific Ocean (including the Sea of Okhotsk, the northern Sea of Japan, and the western Bering Sea)

Semidiurnal, mixed, and diurnal tides occur in the Sea of Okhotsk. The tides are predominantly diurnal, becoming mixed a few days when the moon is over the Equator. Tide ranges vary considerably. Tropic ranges are from 1.7 to 9.1m on the Kamchatka Peninsula and 0.5 to 1.1m on the Sakhalin coast; spring ranges are from 2.44 to 5.0m on the Siberian coast. Meteorological conditions may cause large fluctuations in water level along the W coast of the Kamchatka Peninsula. At the N end of Sakhalin, N winds may raise the water level 1.7m.

Along the E coast of the Kamchatka Peninsula from Mys Shipunskiy to the vicinity of the Komandorski Islands, the tides are mixed.

In Anadryskiy Zaliv, the tides are semidiurnal; the spring ranges are about 2.4m.

Spring ranges vary from 1.2m along the E coast of the Kamchatka Peninsula to about 0.6m in the Bering Strait.

Southwest North Pacific Ocean (including Formosa Strait, the East China Sea, the Yellow Sea, the Sea of Japan, and the S coast of Japan)

The tide along the coasts of Taiwan is mixed; mean ranges vary from 0.5 to 1.1m along the E coast and 1.2 to 1.5m along the W coast.

The tide on the South China coast between 23˚N and 34˚N is mixed; two high waters and two low waters usually occur each tidal day, with large inequalities between the heights of successive high and/or successive low waters. Mean ranges vary from 0.9m at Shan-Tou (Swatow) to 8.4m in Hang-chou Wan (Hangchow Bay), but on the central part of the coast the average is about 1.2m.

About 11 miles E of Yen-kuan (near Raining), a tidal bore begins near the time of local low water (at or a little before high water at the entrance to the Chang Chiang), and advances up the river at 15 knots; at Yen-kuan its height may reach 3.4m at springs and 0.6m at neaps. The bore may progress as far as Hang-chou during spring tides. Onshore winds and low atmospheric pressure cause the water level to be higher than predicted, whereas offshore winds and high atmospheric pressure have the opposite effect. The predicted water level may be increased as much as 4.6m along the coasts of Taiwan and South China during severe storms.

The tide along the coasts of North and Northeast China is mixed, except between position 39˚55'N, 119˚35'E and position 40˚10'N, 120˚25'E where the tide is diurnal, with one high water and one low water daily; mean diurnal ranges vary from about 0.8 to 0.9m. The mean tide range along the coast varies, as follows:

1. Between 35˚N and 37˚N—From about 1.8m to 2.4m.
2. From 37˚00'N to about 40˚30'N in Bo Hai—Be-tween 0.8 and 1.2m.
3. In Liaotung Wan—2.0 to 2.7m.
4. Along the W shores of Liaotung Peninsula—1.1 to 1.5m.
5. Lu-shun (Port Arthur)—about 1.8m.
6. The Korean coast—4.6m.

Strong gales may cause the water level to fluctuate about 0.6m near the entrance to Pu-lan-tien Chiang.

In the head of Korea Bay, the tides are mainly semidiurna,l with an inequality that may reach a maximum of about 1.9m, when maximum lunar declinations occur during spring tides. The maximum rise due to tidal forces along this coast is 7.3m.

The tide is mixed along the W coast of Korea, except between 40˚N and 39˚N and between 38˚N and 36˚N, where it is semidiurnal. The tide progression is north and the mean range along shore and among offshore islands varies from 0.6 to 6.4m.

The spring range decreases gradually S along the W coast from about 6.1m at the mouth of the Songchon Gang (39˚30'N., 125˚12'E.) to a minimum of about 0.9m near Western Channel (Tyosan Kan), increases to a maximum of 8.2m at Asan Myoji (36˚58'N., 126˚47'E.), then decreases to about 3.1m at about position 34˚20'N., 126˚30'E.

The spring ranges on Tsushima are about 1.8m on the W coast and from 1.1 to 1.7m along E east coast.

Along the E coast of Korea, the tide is mixed, except for a small area between 36˚N and 37˚N, where it is diurnal. The tide progression is S with high water occurring nearly simultaneously from 37˚N to the Soviet Union border. The tide range along the E coast is small; mean ranges vary from 0.1 to 0.2m; tropic ranges from 0.2 to 0.3m. In the Sea of Japan, tidal ranges are usually less than 0.3m;daily variations in water level from meteorological causes are often greater than those from astronomical forces.

The tide along the coasts of Kyushu, Shikoku, and Honshu is mixed; two high waters and two low waters occur each tidal day with considerable inequality between the heights of successive low waters. Exceptions are in the channels between Shikoku and Kyushu and between Shikoku and Honshu, where the tide is extremely mixed and may become diurnal, with double high waters for several days near maximum lunar declination.

Diurnal inequalities occur in the Naikai; large inequalities occur in the W section, especially in the vicinity of Akashi Kaikyo, the inequalities are comparatively small W of Bisan Seto. A diurnal tide occurs in the vicinity of Akashi Kaikyo for the greater part of each month. The tide ranges are small in the E part of the Naikai and large in the W part. The spring range in the area between Kii Suido and Harima Nada is about 1.4m. In Bisan Seto, the spring range is between 1.5 and 2.4m, while in Bingo Nada and Hiuchi Nada, it is about 3.1 to 4.0m. West from Hiuchi Nada, there is a gradual decrease in the tidal rise; the spring range in Suo Nada is between 2.6 and 3.2m, while in Bungo Suido it is about 1.8m.

Except near Equatorial (0˚) declination, when the tide is nearly semidiurnal, the tides on the S and E coasts of Honshu are characterized by a significant diurnal inequality. This inequality is most conspicuous in the low waters near maximum lunar declination when the tides are nearly diurnal. The mean

spring range varies from 1.1 to 2.1m on the S coast and from 0.6 to 1.1m feet on the E coast.

SOUTHEAST ASIA

General.—Semidiurnal, mixed, and diurnal tides occur in these waters; the tide ranges vary considerably from place to place. On the NW coast of Australia, the mean spring range varies from about 1 to 9m. Along the S part of the E coast of Thailand, the spring range is less than 0.6m.

Eastern Southeast Asia

Semidiurnal, mixed, and diurnal tides occur in these waters. Tide ranges are small; the spring or diurnal range in most places is less than 1.5m.

The tide is generally diurnal, becoming mixed for several days near the time of equatorial (0˚) lunar declination, along the coasts of the Bismarck Archipelago, the Solomon Islands, the NE coast of New Guinea S of about 6˚S., around some of the Caroline Islands, and along a few relatively short stretches of coast in the Philippine Islands. Mixed tides occur along the remaining coasts but become diurnal for several days near the times of maximum N and S lunar declination.

Wind and barometric pressure changes also cause fluctuations in water level. In general, strong onshore winds and low barometric pressure cause higher water levels than predicted, and strong offshore winds and high barometric pressure cause below-normal water levels.

When tropical storms move onshore large waves, with heights from 3 to 12m, may be formed; these waves are most likely to occur in exposed gulfs and bays when the storm coincides with the time of astronomical high tide.

Western Southeast Asia

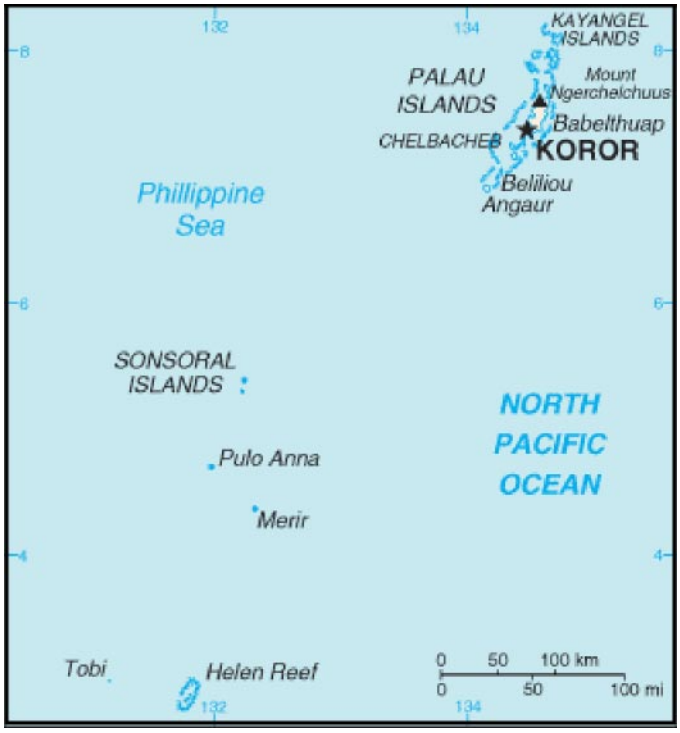
Semidiurnal, mixed, and diurnal tides occur in these waters. Where the tide is semidiurnal, two high and two low waters occur each tidal day, with little inequality in heights and durations of successive high and successive low waters. In regions of mixed tides, two high waters and two low waters occur each tidal day, with considerable inequalities in heights and durations of successive high and/or successive low waters. Diurnal tides consist of one high water and one low water each tidal day. In regions of diurnal tide, the tide becomes mixed for several days near the time of equatorial (0˚) declination of the moon. Where the tide is mainly mixed, diurnal tides may occur for a few days near maximum N and S lunar declinations.

Tide ranges differ considerably throughout the area. For example, at Hall Point, on the NW coast of Australia, the mean spring range is 9m, w hereas, at Songkhla, on the E coast of Thailand, it is 0.5m.

Data on fluctuations in water level due to meteorological causes is sparse. In general, strong onshore winds and low barometric pressure may cause the water level to be higher than predicted; whereas, offshore winds and high barometric pressure may cause it to be lower than predicted. When a typhoon moves onshore, large storm waves, with heights from 3 to 12m may be formed. This is particularly true in gulfs, bays, and constricted areas and especially when the typhoon arrives near the time of spring tide. Such storm waves have flooded Hai Phong and places on Hai-nan Tao. The water level may rise as much as 4m above the predicted level on Hai-nan Tao during typhoons.

Storm waves have also occurred in the Philippines, in the Gulf of Thailand, and along the China coast. In some locations seasonal variations occur in the mean water level; for example, at the Paracel Islands (Xisha Qundao), Ling-shui Wan, Yu-Iin Chiang, Yai-hsien, Le Cone (not Cone), and along the coast of Vietnam from Vung Chon May to Phan Thiet, the water level is about 0.4m higher from November through January than during May through August. A seiche (stationary wave) with a period varying from 13 to 25 minutes occurs at Kao-hsiung Chiang.

PALAU



General

Palau is a group of 26 islands and over 300 islets, only nine of which are inhabited, in the Pacific Ocean SE of the Philippines. Most inhabitants live on the small island of Koror.

The climate is pleasantly warm throughout the year. The heaviest rainfall is between July and October.

The terrain of the islands ranges from high and mountainous to low coral islands fringed by large barrier reefs.

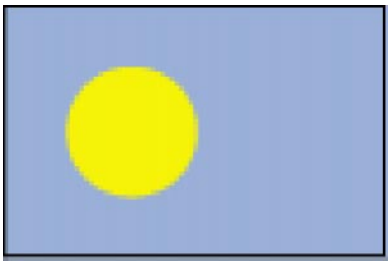
Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the U.S. dollar, consisting of 100 cents.

Government



Flag of Palau

Palau is a constitutional government is free association with the United States. The country is divided into 16 states.

Palau is governed by a directly-elected president serving a 4-year term. The bicameral Parliament consists of the 9-member directly-elected Senate, who serve 4-year terms, and the 16-member directly-elected House of Delegates, who serve 4-year terms.

The legal system is based on Trust Territory laws; acts of the legislature; and municipal, common, and customary law.

The capital is Koror, although a new capital is presently (2004) under construction 20 miles NE.

Holidays

The following holidays are observed:

January 1	New Year's Day

Third Monday in January	Martin Luther King Day
Third Monday in February	President's Day
March 15	Youth Day
Good Friday	Variable
May 5	Elderly Day
Ascension Day	Variable
Whitmonday	Variable
May 31	Memorial Day
July 4	Independence Day
July 9	Constitution Day
First Monday in September	Labor Day
Second Monday in October	Columbus Day
November 11	Veteran's Day
Fourth Thursday in November	Thanksgiving Day
December 25	Christmas Day

Industries

The main industries are based on food processing, boat building, agriculture, and tourism.

Languages

Palauan and English are the official languages.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Palau are, as follows:

Territorial Sea	3 miles.
Fisheries or Economic Zone	200 miles.

Search and Rescue

The National Emergency and Management Office (NEMO) is responsible for coordinating search and rescue operations.

Time Zone

The Time Zone description is INDIA (-9). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Ambassador to the Philippines is accredited to Palau.

The mailing address of the U.S. Mission in Palau is P.O. Box 6028, Republic of Palau, 196940.

U. S. Embassy Philippines Home Page
http://manila.usembassy.gov

PANAMA

General

Panama, located in Central America, is bordered on the E by Colombia and on the W by Costa Rica. The Caribbean Sea lies to its N and the North Pacific Ocean lies to its S.

Heavily-wooded hills and mountain ranges generally span the length of the country, with the exception of the low gap at its narrowest part, through which the Panama Canal crosses. The coastal areas are largely plains and rolling hills.

Elevations E of the canal rise to a height of about 1,615m near the Colombian border and to a height of 3,475m in the mountains to the W of the canal.

The climate is tropical. It is hot, humid, and cloudy with the rainy season from May to January and the dry season from January to May.

Most of the numerous rivers of the country flow into the Pacific Ocean and are of little or no importance to navigation.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

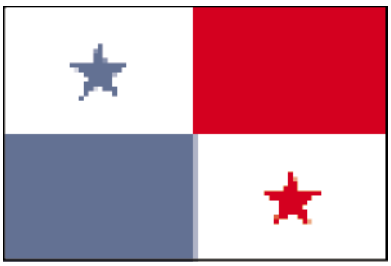
Many navigational lights along the coast have been reported to be unreliable, irregular, or operating at a reduced range.

Turtle nets and buoys may be encountered near the coast in the NE approach to the Panama Canal.

Currency

The official unit of currency is the balboa, consisting of 100 centesimos.

Government



Flag of Panama

Panama is a constitutional republic. The country is divided into nine provinces and one territory.

Panama is governed by a directly-elected President who serves a non-renewable 5-year term. The unicameral Legislative Assembly consists of 72 directly-elected members serving 5-year terms.

The legal system is based on civil law.

The capital is Panama City.

Holidays

The following holidays are observed:

January 1	New Year's Day
January 9	National Mourning Day
Carnival	Variable
Ash Wednesday	Variable
Holy Thursday	Variable
Good Friday	Variable
Holy Saturday	Variable
Easter Sunday	Variable
May 1	Labor Day
June 16	Dia del Padre
November 3	Independence Day from Colombia
November 4	Flag Day
November 5	Colon Day (Colon only)
November 10	Uprising of Los Santos
November 28	Independence Day from Spain
December 8	Mother's Day
December 25	Christmas Day
December 31	New Year's Eve

Industries

The main industries are based on manufacturing, and construction, petroleum refining, brewing coffee, cement and other construction materials, and sugar milling.

Local industries include cigarettes, clothing, food processing, shoes, soap, and cement products. Foreign firms are being encouraged to establish industries, and an oil refinery is in operation in Colon.

The most important crops are bananas and sugar cane. Also grown are rice, maize, cocoa, coffee, and coconuts. Livestock are being raised in increasing number.

Timber resources, notably mahogany, are considerable.

Languages

Spanish is the official language, although a segment of the population speaks English as a native tongue. Many Panamanians are bilingual.

Navigational Information

Enroute Volumes

Pub. 148, Sailing Directions (Enroute) Caribbean Sea Volume 2.

Pub. 153, Sailing Directions (Enroute) West Coasts of Mexico and Central America.

Maritime Claims

The maritime territorial claims of Panama are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* Claims the Gulf of Panama as a historic bay.

Regulations

International Ship and Port Facility Security (ISPS) Code

The Panama Canal Authority has adopted regulations similar to those established by the ISPS Code, even though the Panama Canal does not fall within the ISPS Code definition of a port facility.

All vessels to which SOLAS 74 regulations apply and which plan to arrive in Panama canal waters are expected to comply with the ISPS Code and related Panama Canal Regulations. Additionally, those vessels not required to comply with the ISPS Code will be expected to provide evidence they have implemented onboard security measures comparable to those contained in the ISPS Code.

Vessels not fully able to comply with these requirements may be subject to control and compliance measures, which may include a more detailed inspection and assignment of additional resources at their own cost. These measures could also result in transit delays or the denial of transit.

Electronic Data Collection System (EDCS) Code

The following documents are required to be submitted through ECDS at least 96 hours prior to arriving in Panama Canal waters:

1. ETA/Ship Due (Form 4376).
2. Cargo Declaration (Form 4363).
3. Passenger List (Form 20).
4. Crew List (Form 1509).

Updates to this information may be submitted up to 12 hours prior to arrival but these changes will be subjected to security verification.

Vessels with a voyage time of less than 96 hours from their last port of call prior to entering the canal must still provide preliminary information 96 hours in advance. Vessels will be required to provide their final information to the Panama Canal Authority immediately upon departure from their last port of call.

With the implementation of EDCS, vessels no longer need to provide the canal Boarding Officer with hard copies of the

Cargo Declaration, Passenger List, and Crew List. However, vessels are still required to provide Boarding Officers with a hard copy of the Ship's Information and Quarantine Declaration (SIQD) (Form 4398), which should be completely filled out, with the exception of information on any dangerous cargo, which is required to be forwarded in advance through EDCS. The SIDQ from is available at the following web site:

Ship's Information and Quarantine Declaration (SIQD)
http://www.pancanal.com/eng/maritime/forms.html

Oil Pollution Emergency Plan

All vessels using the Panama Canal having a carrying capacity of 400 metric tons or more of oil as cargo or fuel must have a Panama Canal Ship Oil Pollution Emergency Plan (PCSOPEP) in place. Vessels without a PCSOPEP could face transit delays and financial penalties.

Each PCSOPEP must be submitted at least 96 hours prior to arrival in canal waters and should include the following information at a minimum:

1. Oil pollution prevention measures for Panama Canal waters.
2. Spill notification procedures in a prioritized sequence.
3. Spill response procedures.
4. Crew training program for reaction to shipboard and shoreside spill incidents.
5. Record of PCSOPEP notification exercises.
6. Identification of the authorized person, as well as the telephone number and facsimile number where they can be reached on a 24-hour basis.

Search and Rescue

Panama Intelmar Radio (HPP) maintains a continuous listening watch for distress traffic on 2182 kHz and VHF channel 16.

Time Zone

The Time Zone description is ROMEO (+5). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at Avenida Balboa and Calle 39.

The mailing addresses are, as follows:

1. Panama address—
   Apartado 6959
   Panama City 5
2. U. S. address—
   Unit 0945
   APO AA 34002

U. S. Embassy Panama Home Page
http://panama.usembassy.gov

PAPUA NEW GUINEA

General

The former territories of New Guinea and Papua achieved self-government on December 1, 1973 and were amalgamated to form the combined state of Papua New Guinea.

Papua New Guinea is located in Southeastern Asia, part of a group of islands including the E half of the island of New Guinea between the Coral Sea and the South Pacific Ocean, E of Indonesia.

The climate is tropical. The Northwest Monsoon occurs from December to March. The Southeast Monsoon occurs from May to October with slight seasonal temperature variations.

The terrain is mostly mountains with coastal lowlands and rolling foothills.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

It has been reported (2006) that aids to navigation in Papua New Guinea may be unreliable due to vandalism and deterioration; a repair program of the aids to navigation is underway.

Cautions

General

Caution must be exercised when navigating off the NE coast of Papua New Guinea due to the incomplete nature of the surveys in this area.

Large floating tree trunks and rafts of vegetation washed down from the rivers entering the Gulf of Papau (8˚30'S., 145˚00'E.) may be encountered within 100 miles of the coast and are hazardous to shipping. Some of the temporarily mark the shoals on which they have become stranded. Discolored water may be found up to 30 miles offshore.

The volume of commercial shipping passing through Torres Strait is considerable. A large number of local craft also operate between the islands.

Special Warning 77 (Issued 25 May 1990)

1. Bougainville Island declared unilateral independence from Papua New Guinea May 17, 1990. The government of Papua New Guinea does not recognize the declaration. Consequently, the political situation may be tense in the future.

2. The following Notice to Mariners No. 36/90 issued by the government of Papua New Guinea is quoted in its entirety:

"Quote. Overseas vessels are advised to stand clear of the islands of the Bougainville and Buka and to

remain outside of territorial waters extending 12 nautical miles from the coast of Bougainville and Buka and immediately adjacent islands but excluding Solomon Islands territory, and excluding the groups of islands or atolls known as Feni, Green, Nuguria, Carteret (Kilinailau), Mortlock (Tauu), and Tasman (Nukumanu). Any vessel entering the waters adjacent to Bougainville or Buka will be subject to stop and search powers. This Notice to Mariners is effective immediately (22nd May 1990 EST) in respect to overseas shipping. Papua New Guinea coastal vessels will be restricted as of midnight local time on 20th May 1990. Restrictions will continue for an indefinite period. Charts affected are BA 214, BA 2766, BA 3419, BA 3420, BA 3830, BA 3994, INT 604 and AUS 4604. Dept of Transport. Port Moresby. Papua New Guinea. Unquote."

3. U.S. mariners are advised to exercise extreme caution in entering and transiting the waters of Bougainville.

Currency

The official unit of currency is the kina, consisting of 100 toea.

Firing Areas

AY/R921 (Port Moresby)—Gunnery area enclosed by a line joining the following positions:

a. 9˚38'00"S, 146˚52'00"E.
b. 9˚41'30"S, 146˚55'30"E.
c. 9˚55'00"S, 146˚50'00"E.
d. 9˚44'00"S, 146˚38'30"E.

AY/R962 (Admiralty Islands)—Gunnery and weapons area enclosed by a line joining the following positions:

a. 0˚47'S, 147˚00'E.
b. 0˚47'S, 147˚40'E.
c. 1˚47'S, 147˚40'E.
d. 1˚47'S, 147˚00'E.

Fishing Areas

A significant level of commercial fishing takes place in Torres Strait during the prawn season, which occurs from May through September. These vessels work exclusively at night and anchor in the lee of the islands by day.

Government

Papua New Guinea is a constitutional monarchy with a parliamentary democracy. The country is divided into 20 provinces.

Elizabeth II, recognized as the Chief of State, appoints a Governor-General. The Premier and the cabinet are appointed by the Governor-General. The unicameral National Parliament is composed of 109 directly-elected members serving 5-year terms.

The legal system is based on English common law.

The capital is Port Moresby.

Flag of Papua New Guinea

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Sunday	Variable
Easter Monday	Variable
Third Monday in June	Queen's Birthday
July 23	Remembrance Day
September 16	Independence Day
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on copra crushing; palm oil processing; plywood production; wood chip production; gold, silver, and copper mining; construction; and tourism.

Languages

English is the official language. Pidgin English is commonly spoken. Motu is spoken in the Papua area.

There are over 700 different indigenous languages used by the various tribes.

Mined Areas

Port Moresby

Within Port Moresby and its approaches, the following areas are now considered to be safe for surface navigation but are not safe for anchoring, diving, dredging, trawling, cable laying, and submarine bottoming:

1. The area bounded by lines joining the following positions:

a. 9˚32'00"S, 147˚03'00"E.
b. 9˚32'00"S, 147˚07'30"E.
c. 9˚31'02"S, 147˚07'23"E.
d. 9˚30'19"S, 147˚05'31"E.

e. 9˚29'30"S, 147˚05'30"E.
f. 9˚29'31"S, 147˚07'11"E.
g. 9˚28'00"S, 147˚07'00"E.
h. 9˚28'00"S, 147˚03'00"E.

2. The area bounded by the land, the parallel of 9˚36'S, and by the meridians of 147˚11'E, and 147˚18'E.

Bougainville Island—South End

Mines exist in the sea area N of a line joining the following positions:

1. Moila Point (6˚52.5'S., 155˚42.5'E.).
2. East Point (6˚47.8'S., 155˚54.7'E.).

Bougainville Island—Buka Passage

The area bounded by lines joining the following positions is open to surface navigation only:

a. 5˚20'S, 154˚35'E.
b. 5˚20'S, 154˚48'E.
c. 5˚37'S, 154˚48'E.
d. 5˚37'S, 154˚35'E.

Anchoring, trawling, and submarine bottoming are dangerous due to sunken mines.

New Ireland—Approaches to Kavieng

The area bounded by lines joining the following positions is dangerous to navigation due to magnetic mines:

a. 2˚25'S, 150˚25'E.
b. 2˚25'S, 150˚55'E.
c. 2˚45'S, 150˚55'E.
d. 2˚45'S, 150˚25'E.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.
Pub. 164, Sailing Directions (Enroute) New Guinea.

Maritime Claims

The maritime territorial claims of Papua New Guinea are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	The 200m curve or the Limit of Exploitation.

* Claims archipelagic status. Territorial sea claim reduced to 3 miles in the Torres Strait area.

Pilotage

Pilotage is compulsory at Port Moresby. Services at other ports may require 48 hours notice.

Regulations

The regulations are extractions from the Shipping, Port, and Harbor Regulations.

Any person who deposits in a port or on the shore thereof, any garbage, rubbish, putrefying matter, dead animal, or refuse of any description, shall be guilty of an offense.

The master of a vessel shall not permit any oil or inflammable liquid to be pumped out of or otherwise discharged from the vessel into the waters of any port.

A master of a vessel who, while the vessel is lying alongside a wharf, or while within 183m of a wharf, permits ashes to be discharged into a port, shall be guilty of an offense.

The master of a vessel having explosives on board shall not permit the vessel to berth at any wharf without the permission of a Port Authority.

The master of a vessel shall permit explosives or inflammable liquids to be loaded onto or unloaded from the vessel during daytime only, and by such means, at such places, and under such conditions as a Port Authority directs.

The master of a vessel shall not anchor the vessel within 183m of any wharf used by overseas vessels or near or at the approach of any wharf in such a manner as to impede the egress or ingress of any vessel.

The presence of skin divers is denoted by a red square flag with a white St. Andrew's Cross. Vessels seeing this signal should exercise caution and avoid the area if possible.

It is prohibited to anchor or trawl within 10 miles of a submarine pipeline.

Search and Rescue

A Maritime Rescue Coordination Center is located at Port Moresby.

Time Zone

The Time Zone description is KILO (-10). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. Embassy is situated at Douglas Street, Port Moresby.

The mailing address is P.O. Box 1492, Port Moresby.

U. S. Embassy Papua New Guinea Home Page
http://portmoresby.usembassy.gov

PERU

General

Peru is located in western South America, bordering the South Pacific Ocean, between Chile and Ecuador.

The climate varies from tropical in the E to dry desert in the W. In coastal areas, temperatures vary little, both daily and annually, but humidity and cloudiness exhibit large variations; the highest humidity occurs from May through September, although there is little precipitation during this period. In the mountains there is little temperature variation over there year, but the daily range is considerable; the dry season is from April through November.

The terrain is a coastal plain in the W, the high and rugged Andes Mountains in the center, and the lowland jungle of the Amazon River Basin in the E.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Navigation, anchoring, or fishing are prohibited within 0.5 mile of offshore tanker moorings and buoys used for the loading or unloading of flammable liquids along the coast of Peru.

Currency

The official unit of currency is the nuevo sol, consisting of 100 centimos.

Government

Peru is a republic. The country is composed of 24 departments and one constitutional province, although it has been reported (2002) that these administrative divisions are now called regions.

Peru is governed by a directly-elected President serving a 5-year term. The Council of Ministers is appointed by the President. The unicameral Congress of the Republic consists of 120 directly-elected members serving 5-year terms.

The legal system is based on a civil law system.

The capital is Lima.

Flag of Peru

Holidays

The following holidays are observed:

January 1	New Year's Day
Holy Thursday	Variable
Good Friday	Variable
May 1	Labor Day
June 24	Inti Raymi
June 29	St. Peter and St. Paul
July 28-29	Independence Days
August 30	Santa Rosa of Lima (Lima only)
October 8	Battle of Angamos
November 1	All Saints' Day
December 8	Immaculate Conception
December 25	Christmas Day

Industries

The main industries are based on mining of metals, petroleum, fishing, textiles, clothing, food processing, cement, auto assembly, steel, shipbuilding, and metal fabrication.

Languages

Spanish and Quechua are the official languages. Aymara is also spoken by a significant portion of the population.

Navigational Information

Enroute Volume

Pub. 125, Sailing Directions (Enroute) West Coast of South America.

Maritime Claims

The maritime territorial claims of Peru are, as follows:

Territorial Sea *	200 miles.
Continental Shelf	200 miles.

* The 200-mile claim is without prejudice to freedom of international communication "in conformity with the laws and treaties ratified by the state."

Maritime Boundary Disputes

Dispute with Chile over the economic zone delineated by the maritime boundary.

Prohibited Areas

Area to be Avoided

An Area to be Avoided has been established around Paracas National Reserve. Vessels greater than 200 grt carrying hydrocarbons and hazardous bulk liquids should avoid the area enclosed by the shore and lines joining the following positions:

a. 13˚47'12.0"S, 76˚17'24.0"W.
b. 13˚46'12.0"S, 76˚17'24.0"W.
c. 13˚46'31.2"S, 76˚30'00.0"W.
d. 13˚26'31.2"S, 76˚30'00.0"W.
e. 13˚26'25.2"S, 76˚00'00.0"W.

Regulations

Notice of Arrival

All vessels approaching a Peruvian port are required to report to the relevant Port Control Center to request permission to enter the local Control Area. The Control Area for any port is the area with a 20-mile radius from the furthest seaward of the following:

1. The anchorage area.
2. The relevant mooring buoys.
3. The outermost buoys marking the approach channel.

This permission should be initially requested on VHF channel 16; further communications will then be conducted on VHF channel 13. All communications between the vessel and the Port Control Center will be in Spanish.

Vessels shall not exceed a speed of 5 knots when reaching a distance of 4 miles from the center of the Control Area.

Vessels within the Coastal Zone, in transit or at anchor in the inner roads, near any pier, or moored at a sea buoy may only implement ship movements or carry out an operation with the permission of the Port Control Center.

Vessel Reporting System

The Peruvian Maritime Information System on Position and Safety is mandatory for all Peruvian vessels over 350 grt and all foreign vessels regardless of type and tonnage. The limits of the reporting area are the N and S maritime borders of Peru and a line 200 miles off the coast of Peru. The system is operated by the Peruvian Director General of Harbormasters and Coast Guards. Vessels not complying with the system can be subject to heavy fines.

The destination of messages is subject to constant change by local authorities. Vessels are advised to seek updated information through their agents in Peru. Vessels sending messages through the wrong station will incur a heavy fine.

Messages should be sent, as follows:

1. Fax: +51 (0) 429-1547

+51 (0) 420-0177

2. Telex: +36-26042
3. E-mail: dicatramar@marina.mil.pe
   costeracallao@marina.mil.pe

There are no other means of sending messages. Failed messages should be recorded, as copies will be required by the local Port Captains upon arrival.

Vessels should send reports, as follows:

1. An Entering Peruvian Waters (EPW) report upon entering the reporting area.
2. A DR to correct a report or sailing plan.
3. A PR at 0800 and 2000 local time.
4. An SP report should be prepared by masters prior to departure from a Peruvian port. The local agent will provide the form and present it to the Port Captain.
5. A Departing Peruvian Waters (DPW) report upon leaving the reporting area for vessels not calling at a Peruvian port that have not filed an SP.

Message reporting requirements and formats are given in the accompanying table.

Search and Rescue

The Direccion General de Capitanias y Guardcostas (DICAPI) is responsible for coordinating maritime search and rescue operations and can be contacted by e-mail, as follows:

pemcc@marina.mil.pe

The Maritme Rescue Coordination Center (MRCC) Peru and its associated Maritime Rescue Coordination Subcenters (MRSC) can be contacted by e-mail, as follows:

MRCC Peru:	pemcc@marina.mil.pe
MRSC Paita:	costerapaita@hotmail.com
MRSC Callao:	costeracallao@marina.mil.pe
MRSC Mollendo:	costeramollendo@marina.mil.pe

A network of coast radio stations maintains a continuous listening watch on international distress frequencies.

Time Zone

The Time Zone description is ROMEO (+5). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in Peru are, as follows:

1. Landfall and Approaches to Talara Bay. (IMO adopted)
2. Landfall and Approaches to Bahia de Paita. (IMO adopted)
3. Landfall off Puerto Salaverry. (IMO adopted)
4. Landfall and Approaches to Ferrol Bay (Puerto Chimbote). (IMO adopted)
5. Approaches to Callao. (IMO adopted)
6. Landfall and Approaches to San Martin. (IMO adopted)
7. Landfall and Approaches to San Nicolas Bay. (IMO adopted)
8. Landfall and Approaches to Puerto Ilo. (IMO adopted)

U.S. Embassy

The U.S. Embassy is situated at Avenida La Encalada, Cuadra 17, Surco, Lima.

The mailing addresses are, as follows:

1. Peru address—
   P.O. Box 1995
   Lima 1
2. U. S. address—
   American Embassy (Lima)
   APO AA 34031-5000

U. S. Embassy Peru Home Page
http://lima.usembassy.gov

Peruvian Maritime Information System on Position and Safety—Message Formats and Message Requirements

Designator	Information	EPW	DR	PR	DPW
A	Message type (EPW, DR, PR, or DRW).	X	X	X	X
B	Vessel name, flag, and call sign.	X	X	X	X
C	Date and time of report (6 digits).	X	X	X	X
D	Last port of call.	X			
E	Position (latitude in degrees and minutes S and longitude in degrees and minutes W).	X	X	X	X
F	True course in degrees (3 digits).	X	X	X	
G	Speed in knots (to nearest knot—2 digits).	X	X	X	
H	Destination.	X	X	X	X
I	ETA (6 digits as in C).	X	X	X	

Peruvian Maritime Information System on Position and Safety—Message Formats and Message Requirements					
Designator	**Information**	**EPW**	**DR**	**PR**	**DPW**
J	Anticipated route, with a maximum of six waypoints (positions reported as in E).	X	X		
K	Ship's local agent.	X	X		
X	Reason for deviation; changes in ETA or speed; date and time of deviation (6 digits as in C); position of deviation (reported as in E); course.		X		

PHILIPPINES

General

The Philippines is located in Southeast Asia, between the Philippine Sea and the South China Sea, E of Vietnam.

The climate is tropical marine with the Northeast Monsoon from November to April and the Southwest Monsoon from May to October. The rainy season occurs from June through November. Mean temperatures are high all year, with very little variation.

The terrain is mostly mountains, with narrow to extensive coastal lowlands.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

During the rainy season, a sharp lookout must be maintained for flotsam. Rafts of vegetation and trees of immense size have been found floating in many areas, but especially off the S coast of Luzon.

Trees and logs may be encountered a considerable distance offshore in the Sulu Sea. Driftwood and other debris may be encountered in the vicinity of Balabac Strait (7˚30'N., 117˚00'E.).

Currency

The official unit of currency is the peso, consisting of 100 centavos.

Firing Areas

An area in which missile firing exercises may take place lies within 150 miles of the W coast of Luzon between Scarborough Reef (15˚09'N., 117˚45'E.) and Stewart Bank (17˚11'N., 118˚39'E.).

Fishing Areas

Fishing craft can vary in size from traditional boats of as little as 3m long to modern trawlers 15m or more in length. Large concentrations of vessels may be encountered in coastal waters, with smaller groups found in more open waters.

Large cylindrical metal bouys about 6m long and 1m in diameter have been reported to be used as fishing floats in the Celebes Sea. They are unlit but may be detected by radar at a distance of about 4 miles.

Government

The Philippines is a republic. The country is divided into 73 provinces and 61 chartered cities.

The Philippines is governed by a directly-elected President serving a 6-year term. The Cabinet is appointed by the President. The legislature consists of a 24-member directly-elected Senate serving 6-years terms and a 214-member directly-elected House of Representatives serving 3-year terms, although the President may appoint up to 36 additional members to the House of Representatives

Flag of the Philippines

The legal system is based on Spanish and Anglo-American law.

The capital is Manila.

Holidays

The following holidays are observed:

January 1	New Year’s Day
Holy Thursday	Variable
Good Friday	Variable
April 9	Bataan and Corregidor Heroes’ Day
May 1	Labor Day
June 12	Independence Day
June 24	Manila Day
August 19	Quezon City Day
August 21	Ninoy Aquino Day
August 31	National Heroes Day
November 1	All Saints’ Day
November 30	Bonifacio Day
December 25	Christmas Day
December 30	Rizal Day
December 31	New Year’s Eve

Industries

The main industries are based on textiles, pharmaceuticals, chemicals, wood products, food processing, electronics assembly, and petroleum refining.

Languages

Filipino (based on Tagalog) and English are the official languages. Eight other major dialects are also spoken.

Navigational Information

Enroute Volume

Pub. 162, Sailing Directions (Enroute) Philippine Islands.

Maritime Claims

The maritime territorial claims of the Philippines are, as follows:

Territorial Sea	Based on boundaries in the 1898 Treaty of Paris and subsequent modifications. This results in territorial sea limits varying from 0.5 to 285 miles in width.
Fisheries or Economic Zone	200 miles.
Continental Shelf	The Limit of Exploitation.

* Claims archipelagic status.

Maritime Boundary Disputes

Involved in a complex dispute with Vietnam, China, Taiwan, Malaysia, and possibly Brunei over the Spratly Islands (8˚38'N., 111˚55'E.). The 2002-issued *Declaration on the Conduct of Parties in the South China Sea* has eased tensions but falls short of a legally-binding code of conduct desired by several of the disputants.

Pilotage

Pilotage is compulsory in all pilotage districts, although exemptions are usually granted to local coastal vessels. Pilotage districts are, as follows:

1. Davao.
2. Daet.
3. Dagupan River.
4. Guiuan.
5. Iloilo.
6. Jose Panganiban.
7. Legazpi.
8. Manila Bay.
9. Port Cebu.
10. Port Masinloc.
11. San Fernando Harbor.
12. Santa Cruz.
13. Subic Bay.
14. Tabaco.
15. Tacloban.
16. Zamboanga.

Search and Rescue

The Manila Rescue Coordination Center at the headquarters of the Philippine Coast Guard is responsible for coordinating search and rescue operations. Maritime Rescue Coordination Subcenters (MRSC) are located at MRSC Manila, MRSC Cebu, MRSC Zamboanga, MRSC Batangas, MRSC Palawan, MRSC Iloilo, MRSC La Union, and MRSC Davao.

A network of coast radio stations maintains a continuous listening watch on international distress frequencies.

Signals

Strong Wind Signals

Strong wind signals which may be used in Philippine ports are given in the accompanying table.

Strong Wind Signals

Day	Night	Meaning
One black ball	One white light over one green light *	Winds of unspecified direction, with velocities of 22 to 33 knots, are expected within 24 hours. The direction may be indicated by a cone or cones below the ball.
One black triangle, point up	Two red lights, vertically disposed	Winds from the NW quadrant, with velocities of 34 to 63 knots, are expected within 24 hours.
One black triangle, point down	Two white lights, vertically disposed	Winds from the SW quadrant, with velocities of 34 to 63 knots, are expected within 24 hours.
Two black triangles, points up, vertically disposed	One red light over one white light	Winds from the NE quadrant, with velocities of 34 to 63 knots, are expected within 24 hours.
Two black triangles, points down, vertically disposed	One white light over one red light	Winds from the SE quadrant, with velocities of 34 to 63 knots, are expected within 24 hours.
One horizontal black cylinder	No signal	The wind will be blowing from the direction and at the speed indicated, but will shift within 24 hours in a clockwise direction.

Strong Wind Signals		
Day	**Night**	**Meaning**
Two horizontal black cylinders, one above the other	No signal	The wind will be blowing from the direction and at the speed indicated, but will shift within 24 hours in a counterclockwise direction.
One black cross	One green light between two red lights, vertically disposed **	Typhoon winds of unspecified direction, with velocities of 64 knots and over, are expected within 24 hours. The direction may be indicated by an additional signal.
* It has been reported (2005) that the night signal is one red light.		
** It has been reported (2005) that the night signal is one red light between two white lights, vertically disposed.		

The following storm warning signals are primarily intended for the general public with special emphasis on land areas:

1. **Signal No. 1.—**The siren signal is reported as one long blast, each lasting 45 seconds. There is an existing disturbance. A wind velocity of 30 to 54 miles per hour is expected in the locality within the next 24 hours.

If the storm signal coincides with any time signal in the locality, sounding the storm signal will be delayed 10 minutes.

If the intensity of the disturbance remains the same, the signal will be repeated at 6:10 A.M., 12:10 P.M., and 6:10 P.M. each day. If the disturbance intensifies, any of the two signals given below may be sounded for the place. If the disturbance dissipates and moves away no more signal will be given.

2. **Signal No. 2**.—The siren signal is reported as two long blasts, duration 45 seconds each. A disturbance is approaching the locality. A wind of 55 to 74 miles per hour is expected in the locality within the next 24 hours.

Children are advised to stay indoors. Strengthen houses of light material and take necessary precautions. This signal will be given any time that such force of the wind is expected within the next 24 hours.

If the intensity of the disturbance remains the same the sound signal will be repeated during the following times: 6:10 A.M., 12:10 P.M., 6:10 P.M., and 12:10 A.M.

If the disturbance intensifies, the third signal discussed below will be given in the above schedule. In case the disturbance diminishes the first signal will be given. If the disturbance dissipates no more signal will be given. Interval between blasts will be 30 seconds.

3. **Signal No. 3.—**The siren signal is reported as three long blasts, duration 45 seconds each. The disturbance is dangerous for the locality. A wind of 75 miles per hour or more is expected in the locality within the next 12 hours, usually accompanied by heavy rains.

All necessary precautions will be given, great danger to life and property will be expected.

This signal will be given any time that such force of the wind is expected within the next 12 hours. If the intensity remains the same the signal will be given at 6:10 A.M., 12:10 P.M., 6:10 P.M., 12:10 A.M., and/or a flag displayed accordingly.

If the disturbance weakens or moves away, any one of the two signals given above may be sounded and/or displayed accordingly.

Signals for Vessels Entering Port

All vessels on entering any port, entry or coastwise, in the Philippine Islands shall show their colors and signal their official numbers or letters, and shall signal the number of sacks of mail on board, if any, for that port. These signals are to be displayed until the vessel is boarded by the proper officials.

Customs signals which may be used in Philippine ports are, as follows:

1. Day—Flags E, H, and C of the International Code.
2. Night—Three or four short blasts and waving a light

Maneuvering Signals

Maneuvering signals which may be used in Philippine ports are, as follows:

1. Day—Flags DC of the International Code.
2. Night—A red light displayed 1m vertically below the white anchor light.

Time Zone

The Time Zone description is HOTEL (-8). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in the Philippines are, as follows:

1. Verde Island Passage. (Government of Philippines)
2. Approaches to Manila Bay. (Government of Philippines)
3. Mactan Channel, Cebu. (Government of Philippines)
4. Malapascua Island. (Government of Philippines)

U.S. Embassy

The U.S. Embassy is situated at 1201 Roxas Boulevard, Manila.

The mailing addresses are, as follows:

1. Philippines address—
   1201 Roxas Boulevard
   Manila 1000
2. U. S. address—
   PSC 500

FPO AP 96515-1000

U. S. Embassy Philippines Home Page
http://manila.usembassy.gov

PITCAIRN ISLANDS

General

The Pitcairn Islands, a dependent territory of the United Kingdom, consist of four islands. They are Pitcairn Island, Oeno Island, Ducie Island, and Henderson Island.

Pitcairn Island, the largest and only inhabited island of the group, is located in the South Pacific Ocean about 25˚04'S, 130˚06'W. It is a small irregularly-shaped island about 2 miles long by 1 mile wide; its highest point, near the W end of the island, rises to a peak of 305m.

The coast consists of high almost vertical cliffs, except at Bounty Bay and a small cove on the W side of the island. There are no rivers, but abundant rainfall ensures fresh water, and the island is most productive. The soil, of decomposed lava and rich black earth, is very fertile.

The climate is tropical being hot and humid. It is modified by the Southeast Trade Winds. The rainy season is from November to March.

The terrain is composed of rugged volcanic formations and the rocky coastline has cliffs.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the New Zealand dollar, consisting of 100 cents.

Government

Flag of the Pitcairn Islands

The Pitcairn Islands is an overseas territory of the United Kingdom.

Queen Elizabeth II is recognized as the Chief of State and is represented by the High Commissioner of New Zealand and a non-resident Commissioner.

The Pitcairn Islands is governed by a directly-elected Mayor serving a 3-year term. The unicameral Island Council consists

of five directly-elected members serving 1-year terms, four appointed members, and the Mayor.

The legal system is based on local island by-laws.
The capital is Adamstown.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Monday	Variable
April 28	Bounty Day
First Monday in May	Bank Holiday
Second Saturday in June	Queen's Birthday
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on postage stamps and handicrafts.

The Pitcairn Island's revenue is derived mainly from the sale of postage stamps overseas, interest from investments, and from irregular British development grants.

Fruit, vegetables, and curios are sold to passing ships.

Languages

English is the official language, but the dialect of Pitcairn, a mixture of English and Tahitian, is also spoken.

Navigational Information

Enroute Volume
Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims
The maritime territorial claims of the Pitcairn Islands are, as follows:

Territorial Sea	3 miles.
Fisheries or Economic Zone	200 miles.

Time Zone

The Time Zone description is HOTEL (+8). Daylight Savings Time is not observed.

U.S. Embassy

There are no U.S. diplomatic offices.

RUSSIA

General

Russia is located in Northern Asia, bordering the Arctic Ocean, between Europe and the North Pacific Ocean.

The Pacific, or E coast of Russia is formed over about 7,100 miles of rugged coastline from Chukotskiy Poluostrov, at the Bering Strait, to the N border of Korea. The N most provinces, which are washed by the Bering Sea, are desolate and sparsely populated except near the S end of Kamchatka, a large peninsula situated off the W end of the Aleutian chain.

The climate is varied from subtropical with abundant rainfall, to extremely cold winters with short cool summers.

In general, Russia has a continental type of climate, which is characterized by cold winters and warm summers.

The terrain is characterized by a broad plain with low hills W of the Urals.

There is vast forest and tundra in Siberia with uplands and mountains along the S border regions.

The Sea of Okhotsk

Formed within Kamchatka, the Kuril Islands, Sakhalin, and the Russian mainland, the Sea of Okhotsk is about 1,350 miles in length but of no great importance because of its rugged and sparsely settled condition.

Fishing is the major occupation but navigation is difficult during the season because of heavy fog and the lack of navigational aids.

Tidal ranges are great in the N and W extremities of the sea and phosphorescence in the water is a phenomenon of the region.

The Sea of Japan

Formed within the Japanese Islands, Russia, and Korea, the Sea of Japan borders that part of the E coast of Russia known as the Maritime Provinces. The heaviest shipping and trade of the country's Pacific coast is carried on here with nearly every port available to foreign vessels situated in this area.

Although there is considerable fog in the spring and early summer, a good part of the season is both fog and ice free with many ports open throughout the year.

Vessels normally approach from Korea Strait or Tsugaru Kaikyo. During summer or mild winters, La Perouse Strait is occasionally used.

Sakhalin

The island of Sakhalin, situated N of Hokkaido and separated from the mainland of Russia by Tatar Strait, is about 520 miles long in a N to S direction and up to 100 miles wide.

There are several ports on its W side open to foreign vessels during the season but with the exception of its SW coast it is generally icebound in winter. The narrow part of Tatar Strait is considerably shoaler than the S part and effectively blocks most vessel traffic, the bulk of which must approach the Amur valley from the N.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Temporary markings indicating areas prohibited for navigation, anchoring, and fishing, and naval exercise areas, will be broadcast by marine radio and published in the weekly notice.

Cautions

Protection zones have been established extending 100m on each side of all pipelines in Russian waters. Anchoring, trailing an anchor, trawling, dredging, or any operation which could endanger a pipeline is prohibited within these zones. The same restrictions apply within 0.25 mile on each side of the seabed cables.

Because of insufficient information, it is not possible to ensure that NGA charts and publications, covering the coasts of Russia and adjacent waters, are up to date concerning new dangers or changes to navigational aids or warnings and mariners are therefore cautioned to exercise additional care when navigating these waters.

Offshore exploration and drilling operations take place off the coast of Russia. Production platforms and associated structures are found off the E coast of Sakhalin.

Currency

The official unit of currency is the ruble, consisting of 100 kopeks.

Firing Areas

Bombing Areas

East of Bukhta Innokentiya

Area No. 53.—Area bounded by lines joining the following positions:

a. 48˚39.0'N, 140˚28.0'E.
b. 48˚39.0'N, 140˚50.0'E.
c. 48˚34.0'N, 140˚50.0'E.
d. 48˚34.0'N, 140˚28.0'E.

South of Zaliv Petra Velikogo

Area No. 54.—Area bounded by lines joining the following positions:

a. 42˚10'N, 131˚10'E.
b. 42˚26'N, 132˚50'E.
c. 41˚50'N, 132˚50'E.
d. 41˚50'N, 131˚10'E.

Sea of Okhotsk.—Area bounded by a circle with a radius of 1 mile centered at position 57˚59'N, 150˚22'E.

Firing Practice Areas

North Part of Proliv Tatarskiy

Area No. 4D.—Area bounded by lines joining the following positions:

a. 51˚25.7'N, 142˚03.9'E.
b. 50˚35.5'N, 141˚47.0'E.
c. 50˚40.0'N, 140˚44.0'E.
d. 51˚40.0'N, 141˚22.5'E.

Kamchatka

Firing Practice Area No. 2B.—Area bounded by the shoreline and lines joining the following positions:

a. 51˚13.0'N, 157˚14.0'E.
b. 50˚45.0'N, 158˚10.0'E.
c. 54˚27.0'N, 163˚00.0'E.
d. 54˚50.0'N, 162˚06.0'E.

Firing Practice Area No. 3C.—Area bounded by lines joining the following positions:

a. 50˚07.0'N, 163˚02.0'E.
b. 47˚35.0'N, 167˚35.0'E.
c. 49˚00.0'N, 169˚15.0'E.
d. 50˚55.0'N, 164˚00.0'E.

Explosives Dumping Areas

Zaliv Petra Vilikogo

Area No. 138 (South of Mys Povorotnyy).—Area bounded by lines joining the following positions:

a. 42˚29.5'N, 132˚59.0'E.
b. 42˚29.5'N, 133˚06.0'E.
c. 42˚18.0'N, 133˚06.0'E.
d. 42˚18.0'N, 132˚59.0'E.

Zaliv Petra Vrlikogo to Mys Belkina

Area No. 137 (East of Mys Nizmenyy).—Area bounded by lines joining the following positions:

a. 43˚30.0'N, 135˚27.0'E.
b. 43˚30.0'N, 135˚30.0'E.
c. 43˚28.0'N, 135˚30.0'E.
d. 43˚28.0'N, 135˚27.0'E.

Area No. 136 (East of Mys Chetyrekh Skal).—Area bounded by lines joining the following positions:

a. 43˚51.0'N, 135˚46.0'E.
b. 43˚51.0'N, 135˚54.0'E.
c. 43˚46.0'N, 135˚54.0'E.
d. 43˚46.0'N, 135˚46.0'E.

Gulf of Tartary

Area No. 135 (East of Grossevicha).—Area bounded by lines joining the following positions:

a. 48˚00.0'N, 140˚49.0'E.
b. 48˚00.0'N, 141˚04.0'E.
c. 47˚50.0'N, 141˚04.0'E.
d. 47˚50.0'N, 140˚49.0'E.

Area No. 134 (Southwest of Mys Lamamon).—Area bounded by lines joining the following positions:

a. 48˚35.05'N, 141˚14.95'E.

b. 48˚35.05'N, 141˚27.95'E.
c. 48˚20.05'N, 141˚27.95'E.
d. 48˚20.04'N, 141˚14.95'E.

Area No. 133 (Northeast of Mys Syurkum).—Area bounded by a circle with a radius of 1 mile centered at position 50˚15.1'N, 141˚21.0'E.

East Coast of Ostrov Sakhalin

Area No. 132 (East of Mys Aniva).—Area bounded by lines joining the following positions:

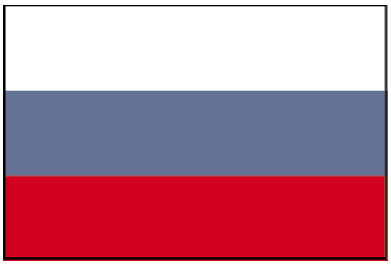
a. 46˚05.0'N, 144˚08.0'E.
b. 46˚05.0'N, 144˚15.0'E.
c. 46˚00.0'N, 144˚15.0'E.
d. 46˚00.0'N, 144˚08.0'E.

Avachinskiy Zaliv

Area No. 131 (Mys Krutoy).—Area bounded by lines joining the following positions:

a. 52˚34.5'N, 158˚54.5'E.
b. 52˚34.5'N, 159˚02.8'E.
c. 52˚29.5'N, 159˚02.8'E.
d. 52˚29.5'N, 158˚54.5'E.

Government



Flag of Russia

Russia is a federation. The country is divided into 89 various administrative entities.

Russia is governed by a directly-elected President serving a maximum of two consecutive 4-year terms. The bicameral Federal Assembly is composed of the 178-member appointed Council of the Federation (upper chamber), serving 4-year terms, and the 450-member State Duma (lower chamber), of which 225 members are directly elected and 225 members are elected on the basis of proportional representation, serving 4-year terms.

The legal system is based on civil law.

The capital is Moscow.

Holidays

The following holidays are observed:

January 1	New Year’s Day
January 7	Russian Orthodox Christmas
February 24	Defenders’ Day
March 8	International Women’s Day
May 1 and 2	Spring and Labor Holiday
May 9	Victory Day
June 12	Independence Day
August 22	Day of the Russian Federation State Flag
November 4	Reconciliation Day
December 12	Constitution Day

Ice

Navigation is restricted or terminated by ice in the Sea of Okhotsk and the N part of the Tatar Strait, from approximately November to May. Icebreaker assistance is normally required within 50 miles of land during this period, and during severe winters ports in this area may be closed or ice-bound.

Russian icebreakers are maintained to assist vessels in the navigation of territorial waters during the ice season. The movements and positions of the icebreakers are reported daily by radio.

These rules have been extracted from Russian Notices to Mariners:

1. The request for convoying vessels through the ice shall be made in port to the Captain of the Port, and at sea to the Master of the icebreaker.

2. A vessel to be convoyed should carry, within the limits of the requirements of good seamanship, a supply of fuel and provisions, wooden fenders, quick-setting cement, patches, mats, and the like, sufficient for the passage. The vessel's pumps should be in good working condition and the vessel should be equipped with a properly functioning radio receiver.

If these conditions cannot be met, and, in addition, if the vessel has not been certified by governmental agencies or classification societies as being fit to put to sea, or if such certification is overdue, the Captain of the Port or the Master of the icebreaker, if the icebreaker is outside the port limits, has the right to refuse the request to take the vessel to sea or to bring it into port.

3. Any vessel in need of an icebreaker convoy shall await the arrival of the icebreaker.

4. The time, and the sequence in which vessels will proceed through the ice, as well as the number of vessels to be convoyed simultaneously, shall be determined in port by the Captain of the Port, and at sea by the Master of the icebreaker.

5. Masters of vessels following icebreakers through the ice shall be subordinate to orders issued by the Master of the icebreaker in so far as they pertain to movement in the ice, and shall act in conformity with such orders. Masters of vessels shall, by their actions, assist the Master of the icebreaker so that passage through the ice area may be made together as rapidly and safely as possible.

6. Vessels following icebreakers shall not overtake each other.

7. Vessels following icebreakers shall be prepared for immediate full astern operation. When the vessel begins to back, the rudder shall be in the "amidships" position.

8. Vessels proceeding through the ice in tow of an icebreaker shall not operate their engines in the ahead direction without special orders from the Master of the icebreaker in each individual case. Vessels shall be constantly alert to drop the tow immediately when ordered to do so by the master of the icebreaker, as well as ready to make full speed astern.

9. The first vessels to be convoyed shall be naval vessels, mail-passenger vessels, and vessels carrying cargo that has been designated as priority. These shall be followed by all remaining vessels in their order of arrival at the edge of the ice, or readiness to leave port.

10. Vessels following an icebreaker and suffering damage shall hoist the distress signal prescribed by the International Rules of the Road.

A vessel suffering damage of any kind in the ice, or springing a leak, shall take immediate steps to repair the damage, and shall, simultaneously, report such damage to the master of the icebreaker by radio or other means of communication.

11. Vessels following an icebreaker through the ice shall be guided by the International Code of Signals. Vessels shall comply immediately with these signals when made by the icebreaker.

12. In the event the master of a vessel being convoyed by an icebreaker fails to comply with the orders issued by the master of the icebreaker, the latter has the right to refuse further convoy until his orders are complied with.

13. Neither the icebreaker, the owner of the icebreaker, nor the charterer shall bear any property responsibility for damage, or for other losses that could be sustained by a ship under convoy during, and as a consequence of its being convoyed through the ice, or as a result of maneuvers while under such convoy.

14. Merchant vessels of all flags are free of all charges for using the services of port icebreakers to convoy them from the edge of the ice into port to the berth, and from the port to sea, as well as for towing during convoy if such towing is deemed necessary by the master of the icebreaker.

The tariffs for the operation of icebreakers in the Arctic, and in the non-Arctic seas that freeze during the winter navigation period shall be paid at the per ton rate by the shipper or receiver, for each ton of cargo, depending on the conditions of the sales contract, as shall the rate for convoying vessels other than those belonging to the Ministry of the Merchant Marine in Arctic waters, levied with established procedure.

The shifting of berths required in connection with cargo handling operations, as well as bunkering, docking, and the like, shall be paid for separately.

15. Any vessel using an icebreaker to convoy it through the ice, by such action consents to placing itself under the provisions of these rules.

16. The Master of a vessel following an icebreaker shall do his own dead-reckoning and keep a running fix of his vessel's position. Upon completion of the convoy through the ice he shall compare his position coordinates with those of the icebreaker.

Industries

The main industries are based on oil, gas, chemicals and metals, mining, machine building, road and transportation equipment, communication equipment, medical and scientific instruments, and consumer durables.

Languages

Russian is the official language

Mined Areas

Mine Danger Area

Area No. 1 (Zaliv Sakhalinskiy).—Area bounded by lines joining the following positions:

a. 53˚28.4'N, 141˚29.7'E.
b. 53˚29.9'N, 141˚29.9'E.
c. 53˚29.9'N, 141˚36.4'E.
d. 53˚26.7'N, 141˚36.3'E.
e. 53˚26.5'N, 141˚34.5'E.

This area is dangerous due to mines.

Former Mine Danger Areas

Due to the elapse of time, the risk in these areas to surface navigation, is now considered no more dangerous than the ordinary risk of navigation. However, a very real risk still exists with regard to anchoring, fishing, or any form of submarine or sea bed activity. The following areas are open to navigation by surface vessels only.

Area No. 2 (Zaliv Avachinskiy).—Area bounded by lines joining the following positions:

a. 52˚36.5'N, 158˚36.0'E.
b. 52˚41.6'N, 158˚39.2'E.
c. 52˚44.9'N, 158˚37.8'E.
d. 52˚58.9'N, 158˚55.7'E.
e. 53˚00.7'N, 158˚59.7'E.
f. 52˚58.8'N, 159˚18.4'E.
g. 52˚40.5'N, 158˚43.6'E.
h. 52˚37.8'N, 158˚40.6'E.

Area No. 3 (Zaliv Avachinskiy).—Area bounded by lines joining the following positions:

a. 52˚54.9'N, 158˚45.2'E.
b. 52˚54.3'N, 158˚46.3'E.
c. 52˚53.2'N, 158˚44.7'E.
d. 52˚53.0'N, 158˚44.0'E.

Area No. 3A (Southeast of Bukhta Dezhneva).—Area bounded by lines joining the following positions:

a. 61˚18.9'N, 174˚58.4'E.
b. 61˚21.5'N, 174˚55.1'E.
c. 61˚38.9'N, 175˚57.0'E.
d. 61˚36.4'N, 175˚59.8'E.

Area No. 4 (Zaliv Sakhalinskiy).—Area bounded by lines joining the following positions:

a. 53˚31.6'N, 141˚01.3'E.

b. 53˚38.3'N, 141˚07.0'E.
c. 53˚33.5'N, 141˚36.4'E.
d. 53˚29.9'N, 141˚36.4'E.
e. 53˚29.9'N, 141˚29.9'E.
f. 53˚28.4'N, 141˚29.7'E.
g. 53˚26.5'N, 141˚34.5'E.
h. 53˚25.7'N, 141˚21.3'E.

Vessels must have an underkeel clearance of at least 3m at LW.

Area No. 5 (La Perouse Strait).—Area bounded by lines joining the following positions:

a. 46˚05.6'N, 142˚12.0'E.
b. 46˚02.6'N, 142˚15.3'E.
c. 45˚47.6'N, 142˚17.2'E.
d. 45˚20.3'N, 142˚10.2'E.
e. 45˚26.9'N, 141˚38.7'E.
f. 45˚47.6'N, 141˚46.6'E.
g. 46˚08.1'N, 141˚41.1'E.
h. 46˚09.9'N, 141˚54.7'E.

Area No. 6 (Tartarskiy Proliv).—Area bounded by lines joining the following positions:

a. 50˚23.9'N, 142˚07.7'E.
b. 50˚20.0'N, 142˚01.0'E.
c. 50˚39.0'N, 140˚39.6'E.
d. 50˚46.1'N, 140˚39.6'E.
e. 50˚51.2'N, 140˚49.5'E.
f. 50˚31.1'N, 142˚03.2'E.

Area No. 7 (Sovetskaya Gavan).—Area bounded by lines joining the following positions:

a. 48˚40.0'N, 140˚20.5'E.
b. 48˚44.2'N, 140˚20.0'E.
c. 48˚58.6'N, 140˚27.0'E.
d. 49˚15.4'N, 140˚27.7'E.
e. 49˚23.6'N, 140˚32.2'E.
f. 49˚20.0'N, 140˚39.9'E.
g. 49˚10.0'N, 140˚45.9'E.
h. 48˚40.0'N, 140˚40.0'E.

Area No. 8 (Approaches to Zaliv Ol'gi and Zaliv Vladimira).—Area bounded by lines joining the following positions:

a. 43˚28.7'N, 135˚11.0'E.
b. 43˚37.5'N, 135˚16.9'E.
c. 43˚44.4'N, 135˚28.0'E.
d. 43˚50.2'N, 135˚33.9'E.
e. 43˚56.5'N, 135˚34.8'E.
f. 44˚01.2'N, 135˚42.2'E.
g. 44˚00.0'N, 135˚48.3'E.
h. 43˚42.1'N, 135˚38.0'E.
i. 43˚30.0'N, 135˚20.2'E.

Area No. 9 (Zaliv Petr Velikiy).—Area bounded by lines joining the following positions:

a. 42˚31.1'N, 130˚52.0'E.
b. 42˚32.0'N, 131˚15.0'E.
c. 42˚44.2'N, 131˚38.5'E.
d. 42˚46.4'N, 131˚54.8'E.
e. 42˚43.1'N, 132˚03.8'E.
f. 42˚40.0'N, 132˚18.4'E.
g. 42˚40.0'N, 132˚30.0'E.
h. 42˚38.3'N, 133˚03.5'E.
i. 42˚42.0'N, 133˚20.5'E.
j. 42˚46.6'N, 133˚33.0'E.
k. 42˚47.4'N, 133˚47.5'E.
l. 42˚52.1'N, 134˚00.6'E.
m. 42˚58.3'N, 134˚11.0'E.
n. 42˚42.2'N, 134˚11.0'E.
o. 42˚25.3'N, 132˚30.0'E.
p. 42˚19.4'N, 131˚25.0'E.
q. 42˚17.7'N, 130˚41.8'E.

Navigational Information

Enroute Volumes

Pub. 155, Sailing Directions (Enroute) East Coast of Russia.

Pub. 183, Sailing Directions (Enroute) North Coast of Russia.

Pub. 195, Sailing Directions (Enroute) Gulf of Finland and Gulf of Bothnia.

Maritime Claims

The maritime territorial claims of Russia are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	Depth of 200m or the Limit of Exploitation.

Maritime Boundary Disputes

Dispute with Norway over maritime limits in the Barents Sea and Russia's fishing rights beyond the territorial limits of Svalbard within the Svalbard Treaty zone.

Dispute with China over alluvial islands at the confluence of the Amur River and the Ussuri River, as well as a small island on the Argun River.

Dispute with Japan over the islands of Etorofu, Kunashiri, Shikotan, and the Habomai Group, known in Japan as the "Northern Territories" and in Russia as the "Southern Kurils." These islands were occupied by the Soviet Union in 1945, are now administered by Russia, and are claimed by Japan.

Pilotage

Pilotage is compulsory for entry to and departure from all Russian ports and for mooring and casting off. Pilots should be ordered through their agent 12 hours in advance and confirmed 4 hours prior to arrival, unless otherwise stated by individual ports.

Vessels should send their ETA via their agent 12 days, 96 hours, and 12 hours in advance. Oil, gas, and chemical tankers should however, confirm their ETA 14 days, 72 hours, and 12 hours before arrival.

In addition, masters must indicate that the vessel has certification guaranteeing civil responsibility for damage from oil pollution.

The following information is required by the Port Authority:

1. Name and flag of vessel.
2. Port of departure (last port of call).
3. Vessel's draft at bow and stern.
4. Cargo capacity of vessel, volume of hold, measurements.
5. Name and quantity of cargo and its distribution by hold (for tankers, in addition, indicate type and disposition of ballast).
6. Requirements from port services.

Information concerning a vessel's sanitation state must be reported in accordance with current sanitation, veterinary, and quarantine regulations.

A vessel's arrival in port must be registered directly with the Port Authority or with a representative of the Transport Fleet Maintenance Service, within the first 6 hours in port for completing sanitation, quarantine, customs, and border formalities.

On sailing, the Port Authority must be informed of intended departure at least 6 hours in advance; during a short term anchorage (less than 6 hours) at least 2 hours notice is required.

Pilotage requirements are uniform for all foreign flag vessels but come under the purview of local pilotage laws. Pilotage requirements may therefore vary from port to port. In the majority of ports, entry and departure of vessels take place around the clock. In some ports pilotage is carried out with the aid of tugs. In others, shore radar and radio direction-finding stations are used.

Pollution

Russian regulations prohibit, under severe penalties, discharge within the economic zone of Russia of oil, oil products, and any other substance or refuse injurious to human health or to the living resources of the sea.

Failure to inform the nearest Russian authority of accidental or emergency discharge in the territorial and internal waters of Russia or failure to note the occurrence carries severe penalties.

Russian merchant vessels and civil aircraft are instructed to inform Russian authorities of witnessed infringements of the Russian regulations and of the international regulations.

Within the territorial and internal waters of Russia vessels suspected of infringing the regulations are liable to be stopped, boarded, and inspected. If an infringement has taken place within those waters the vessel is liable to be detained.

Regulations

Access to Russian ports by any foreign vessel is subject to compliance with applicable laws and regulations of the government of Russia, the governments of the respective Russian Republics, and local municipal and port authorities in the areas wherein they have their jurisdiction.

The following are excerpts of *Regulations and Procedures for Vessels Navigating within Russian Waters.*

Economic Zone

Russia claims an economic zone extending 200 miles seaward from the limits of its territorial sea.

Within the economic zone, the Government of Russia issues regulations in connection with and for the control of:

1. Exploitation and conservation of resources found on or below the sea bed and in the waters above it, including anadromous fish. Fishing of anadromous types of fish is permitted only as a result of inter-governmental agreement.
2. Marine scientific research.
3. Pollution of the marine environment.

Freedom of passage for ships and aircraft through the economic zone is assured.

Regulations exist for the inspection of vessels suspected of causing pollution and penalties for infringement exist.

Foreign Naval Vessels

Foreign naval vessels intending to enter waters of Russian or visit Russian ports should obtain a copy of *Regulations for Foreign Naval Vessels Navigating and Remaining in the Territorial or Internal Waters of Russia or Visiting Russian Ports.* These regulations are published as a Russian Annual Notice to Mariners.

Proposals to visit Russian ports should be forwarded through the Russian Ministry of Foreign Affairs not less than 30 days prior to the suggested visit. This rule does not apply to warships on which heads of governments or heads of state are embarked, nor to ships accompanying them.

Ships whose approach is necessitated by foul weather or engine failure which threatens the safety of the ship must inform the nearest port of the reason for entry, and, if possible, go to a recognized port open to foreign merchant vessels, or to a point indicated by the vessel sent to aid or meet it.

All foreign vessels when within territorial waters or internal waters of Russia, must observe radio communication, navigational, port, customs, sanitary and other regulations.

In the event of an emergency entry into territorial waters, or emergency non-observance of rules for navigation and stay in these waters, foreign vessels must immediately notify the nearest Russian port authority.

Foreign Merchant Vessels

Foreign nonmilitary vessels enjoy the right of innocent passage through Russian territorial waters in accordance with Russian laws and international treaties; innocent passage is effected by crossing them without entering Russian internal waters, or by passing through them en route to or from Russian ports open to foreign vessels.

While effecting innocent passage, vessels must follow the customary navigational course, or course recommended through sea corridors, or be in accordance with traffic separation schemes.

The master of a foreign nonmilitary vessel which has violated the rules of innocent passage is accountable under Russian legislation.

All foreign vessels when within territorial waters or internal waters of Russia must observe radio communication, and navigational, port, customs, sanitary, and other regulations.

In the event of an emergency entry into territorial waters, or emergency nonobservance of rules for navigation and stay in these waters, foreign vessels must immediately notify the nearest Russian port authority.

Internal Waters

Proposals to visit Russian ports should be forwarded through the Russian Ministry of Foreign Affairs not less than 30 days prior to the suggested visit.

This rule does not apply to warships on which heads of governments or heads of state are embarked, nor to ships accompanying them.

Ships whose approach is necessitated by foul weather or engine failure which threatens the safety of the ship must inform the nearest port of the reason for entry, and, if possible, go to a recognized port open to foreign merchant vessels, or to a point indicated by the vessel sent to aid or meet it.

Restricted Areas

Regulated Areas

Regulated areas include all areas where navigation, fishing, or anchoring is prohibited or restricted. Regulated areas also include areas designated by the Russian authorities as temporarily dangerous for navigation. As these prohibitions are for an indefinite period, they are described below as prohibited areas.

Areas where navigation is periodically prohibited that lie within Russian territorial waters; radio warnings are given by PRIP of the date on which such an area becomes prohibited for navigation.

Areas periodically declared dangerous for navigation which may also include various firing, danger, and exercise areas, that lie partly or wholly outside Russian territorial waters; radio warnings are also given by PRIP, of the date on which such an area becomes dangerous for navigation.

The limits of regulated areas are shown on Russian Federation Charts and the areas are listed in the handbooks for those vessels visiting Russian Federation ports.

This handbook is issued by the Russian Federation Ministry of Defense, Central Department of Navigation and Oceanography. Changes to the regulated areas are announced by NAVIM or NAVIP.

The Russian Federation authorities place responsibility on the ship's master for any violation of the limits of a regulated area.

Fortified Zones

Fortified Zones are those areas established by the Russian authorities where special control of navigation exists on a permanent basis.

Prior permission must be obtained to enter or leave such areas, and pilotage through them is compulsory.

Special regulations are in force in these zones, and the pilot's instructions concerning them must be strictly complied with.

Navigation through these zones in fog is normally prohibited.

The geographical positions which follow are those published in Russian Notices to Mariners and/or Russian publications and therefore relate to Russian Federation charts.

Mariners should not navigate near the limits of these areas, when activated, due to possible graduation differences between Russian and NGA charts. Unless otherwise stated the area is bounded by the lines joining the indicated positions.

Areas Temporarily Prohibited for Navigation

La Perouse Strait

Area No. 13E (Zaliv Avina-Korsakov).—Area bounded by lines joining the following positions:

a. 46˚37.9'N, 142˚44.9'E.
b. 46˚37.9'N, 142˚45.1'E.
c. 46˚37.8'N, 142˚45.1'E.
d. 46˚37.8'N, 142˚44.9'E.

Kuril Islands

Area No. 283 (Ostrov Shikotan-Bukhta Malokurl'skaya).—Area bounded by the coastline and lines joining the following positions:

a. 43˚52.25'N, 146˚48.78'E.
b. 43˚52.30'N, 146˚49.00'E.
c. 43˚52.07'N, 146˚49.09'E.
d. 43˚52.00'N, 146˚48.74'E.

Area No. 226 (Ostrov Shikotan-Bukhta Malokurl'skaya).—Area bounded by lines joining the following positions:

a. 43˚52.28'N, 146˚49.10'E.
b. 43˚52.41'N, 146˚49.18'E.
c. 43˚52.38'N, 146˚49.31'E.
d. 43˚52.24'N, 146˚49.25'E.

Area No. 13G (Ostrov Shikotan).—Area bounded by the coastline and lines joining the following positions:

a. 43˚53.28'N, 146˚50.40'E.
b. 43˚53.50'N, 146˚50.40'E.
c. 43˚53.50'N, 146˚51.20'E.
d. 43˚52.50'N, 146˚51.90'E.
e. 43˚52.50'N, 146˚51.65'E.

Area No. 13A (Ostrov Kunashir-Bukhta Yuzhno-Kuril'skaya).—Area bounded by lines joining the following positions:

a. 44˚00.80'N, 145˚48.62'E.
b. 44˚00.56'N, 145˚49.80'E.
c. 44˚00.10'N, 145˚49.51'E.
d. 44˚00.33'N, 145˚48.33'E.

Zaliv Petra Velikogo

Area No. 331 (Southeast of Ostrov Furugel'ma).—Area bounded by lines joining the following positions:

a. 42˚49.08'N, 132˚53.50'E.
b. 42˚49.05'N, 132˚53.73'E.
c. 42˚48.98'N, 132˚53.68'E.

Zaliv Pos'yeta

Area No. 375 (Bukhta Reyd Pallada).—Area bounded by lines joining the following positions:

a. 42˚37.60'N, 130˚48.86'E.
b. 42˚37.84'N, 130˚48.78'E.
c. 42˚37.84'N, 130˚48.94'E.
d. 42˚37.60'N, 130˚49.02'E.

Area No. 376 (Bukhta Reyd Pallada).—Area bounded by lines joining the following positions:

a. 42˚36.77'N, 130˚50.58'E.
b. 42˚37.10'N, 130˚50.32'E.
c. 42˚37.34'N, 130˚50.33'E.
d. 42˚37.02'N, 130˚50.97'E.

Area No. 377 (Bukhta Reyd Pallada).—Area bounded by lines joining the following positions:
a. 42˚34.67'N, 130˚47.50'E.
b. 42˚35.19'N, 130˚47.80'E.
c. 42˚34.36'N, 130˚50.55'E.
d. 42˚33.87'N, 130˚50.20'E.

Area No. 374 (Bukhta Novgorodskaya).—Area bounded by lines joining the following positions:
a. 42˚39.49'N, 130˚49.47'E.
b. 42˚39.46'N, 130˚49.66'E.
c. 42˚39.41'N, 130˚49.64'E.
d. 42˚39.41'N, 130˚49.45'E.

Area No. 362 (Zaliv Kitovyy).—Area bounded by lines joining the following positions:
a. 42˚38.20'N, 131˚03.20'E.
b. 42˚36.50'N, 131˚03.20'E.
c. 42˚36.50'N, 131˚00.00'E.
d. 42˚35.50'N, 130˚57.60'E.
e. 42˚33.40'N, 130˚57.50'E.
f. 42˚33.10'N, 130˚56.40'E.
g. 42˚35.70'N, 130˚52.20'E.

Amurskiy Zaliv

Area No. 344 (Slavyanskiy Zaliv).—Area bounded by the coastline and lines joining the following positions:
a. 42˚54.60'N, 131˚24.00'E.
b. 42˚55.00'N, 131˚24.00'E.
c. 42˚55.00'N, 131˚25.00'E.
d. 42˚54.00'N, 131˚25.00'E.
e. 42˚54.00'N, 131˚24.50'E.

Area No. 343 (Slavyanskiy Zaliv).—Area bounded by the coastline and lines joining the following positions:
a. 42˚54.72'N, 131˚23.05'E.
b. 42˚56.46'N, 131˚25.02'E.

Area No. 345 (Slavyanskiy Zaliv).—Area bounded by the coastline and lines joining the following positions:
a. 42˚55.57'N, 131˚25.90'E.
b. 42˚55.50'N, 131˚25.90'E.
c. 42˚55.50'N, 131˚25.00'E.
d. 42˚55.92'N, 131˚25.00'E.
e. 42˚55.92'N, 131˚25.13'E.

Area No. 277 (Slavyanskiy Zaliv).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚55.30'N, 131˚26.40'E.

Area No. 31 (Mys Firsova).—Area bounded by lines joining the following positions:
a. 43˚09.50'N, 131˚43.30'E.
b. 43˚09.50'N, 131˚52.00'E.
c. 43˚12.00'N, 131˚52.00'E.
d. 43˚12.00'N, 131˚55.00'E.

Area No. 36 (Bukhta Novik).—Area bounded by lines joining the following positions:
a. 43˚03.18'N, 131˚50.78'E.
b. 43˚03.08'N, 131˚51.18'E.
c. 43˚02.91'N, 131˚51.18'E.
d. 43˚02.98'N, 131˚50.78'E.

Area No. 38 (Bukhta Novik).—Area bounded by lines joining the following positions:
a. 43˚00.77'N, 131˚52.93'E.
b. 43˚00.77'N, 131˚49.11'E.
c. 43˚00.60'N, 131˚53.29'E.
d. 43˚00.60'N, 131˚52.93'E.

Area No. 39 (Bukhta Novik).—Area bounded by lines joining the following positions:
a. 43˚02.81'N, 131˚49.11'E.
b. 43˚02.84'N, 131˚49.22'E.
c. 43˚02.80'N, 131˚49.24'E.
d. 43˚02.77'N, 131˚49.12'E.

Proliv Bosfor-Vostochnyy

Area No. 28 (South of Mys Tigrovyy).—Area bounded by the coastline and lines joining the following positions:
a. 43˚04.78'N, 131˚51.58'E.
b. 43˚04.65'N, 131˚51.86'E.
c. 43˚04.37'N, 131˚51.31'E.
d. 43˚04.61'N, 131˚51.31'E.

Area No. 321 (Bukhta Patrokl).—Area bounded by lines joining the following positions:
a. 43˚03.83'N, 131˚56.30'E.
b. 43˚03.94'N, 131˚56.56'E.
c. 43˚03.63'N, 131˚56.89'E.

Area No. 27 (Bukhta Patrokl).—Area bounded by lines joining the following positions:
a. 43˚03.90'N, 131˚57.03'E.
b. 43˚03.71'N, 131˚57.25'E.
c. 43˚03.33'N, 131˚57.20'E.
d. 43˚03.43'N, 131˚57.80'E.

Southwest of Ostrov Russkiy

Area No. 339 (South of Ostrov Lavrova).—Area bounded by lines joining the following positions:
a. 42˚57.18'N, 131˚47.57'E.
b. 42˚57.70'N, 131˚47.57'E.
c. 42˚57.70'N, 131˚47.85'E.
d. 42˚57.18'N, 131˚47.85'E.

Area No. 338 (Northeast of Ostrov Klykova).—Area bounded by lines joining the following positions:
a. 42˚56.10'N, 131˚47.00'E.
b. 42˚56.25'N, 131˚46.85'E.
c. 42˚56.65'N, 131˚47.42'E.
d. 42˚56.32'N, 131˚47.63'E.

Area No. 300 (East of Ostrov Reyneke).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚55.00'N, 131˚45.15'E.

Ussuriyskiy Zaliv

Area No. 26 (Bukhta Sukhoputnaya).—Area bounded by the coastline and lines joining the following positions:
a. 43˚05.23'N, 131˚58.33'E.
b. 43˚05.03'N, 131˚58.67'E.
c. 43˚04.65'N, 131˚58.52'E.
d. 43˚04.72'N, 131˚57.97'E.

Area No. 373 (Southwest of Mys Sedlovidnyy).—Area bounded by the coastline and lines joining the following positions:
a. 43˚05.05'N, 132˚17.43'E.
b. 43˚05.05'N, 132˚17.08'E.
c. 43˚04.30'N, 132˚16.60'E.
d. 43˚04.30'N, 132˚17.00'E.

Proliv Askol'd

Area No. 21V.—Area bounded by lines joining the following positions:

a. 42˚49.10'N, 132˚24.90'E.
b. 42˚49.10'N, 132˚25.50'E.
c. 42˚48.70'N, 132˚25.50'E.
d. 42˚48.70'N, 132˚24.90'E.

Zaliv Strelok

Area No. 241.—Area bounded by the coastline and lines joining the following positions:

a. 42˚53.61'N, 132˚24.47'E.
b. 42˚53.61'N, 132˚23.75'E.
c. 42˚54.20'N, 132˚23.92'E.
d. 42˚54.20'N, 132˚24.20'E.
e. 42˚53.83'N, 132˚24.42'E.

Area No. 242 (Entrance to Bukhta Rudneva).—Area bounded by lines joining the following positions:

a. 42˚54.00'N, 132˚28.00'E.
b. 42˚54.50'N, 132˚28.00'E.
c. 42˚54.50'N, 132˚28.70'E.
d. 42˚54.00'N, 132˚28.70'E.

Zaliv Strelok to Zaliv Vostok

Area No. 274 (Bukhta Rufovaya).—Area bounded by lines joining the following positions:

a. 42˚50.50'N, 132˚36.75'E.
b. 42˚50.77'N, 132˚36.63'E.
c. 42˚50.83'N, 132˚36.80'E.
d. 42˚50.63'N, 132˚37.10'E.

Area No. 369 (East of Bukhta Rufovaya).—Area bounded by the coastline and lines joining the following positions:

a. 42˚51.20'N, 132˚40.50'E.
b. 42˚50.00'N, 132˚40.50'E.
c. 42˚50.60'N, 132˚38.00'E.
d. 42˚51.40'N, 132˚38.50'E.

Zaliv Vostok

Area No. 351.—Area bounded by the coastline and lines joining the following positions:

a. 42˚53.59'N, 132˚43.88'E.
b. 42˚53.84'N, 132˚43.88'E.
c. 42˚53.84'N, 132˚44.40'E.
d. 42˚52.85'N, 132˚44.40'E.
e. 42˚52.85'N, 132˚43.88'E.
f. 42˚53.06'N, 132˚43.88'E.

Bukhta Nakhodka

Area No. 291.—Area bounded by lines joining the following positions:

a. 42˚49.08'N, 132˚53.50'E.
b. 42˚49.05'N, 132˚53.73'E.
c. 42˚48.98'N, 132˚53.68'E.

Zaliv Nakhodka

Area No. 367 (North of Mys Koz'mina).—Area bounded by the coastline and lines joining the following positions:

a. 42˚43.50'N, 133˚00.80'E.
b. 42˚43.60'N, 132˚59.80'E.
c. 42˚45.06'N, 133˚01.70'E.
d. 42˚44.70'N, 133˚02.50'E.

Area No. 368 (Bukhta Koz'mina).—Area bounded by lines joining the following positions:

a. 42˚42.98'N, 133˚00.03'E.
b. 42˚43.20'N, 133˚00.00'E.
c. 42˚42.96'N, 133˚01.01'E.
d. 42˚42.83'N, 133˚00.98'E.

Zaliv Petra Velikogo to Mys Belkina

Area No. 360 (Bukhta Syaukhu).—Area bounded by lines joining the following positions:

a. 42˚52.30'N, 133˚49.40'E.
b. 42˚52.63'N, 133˚49.00'E.
c. 42˚53.18'N, 133˚49.88'E.
d. 42˚53.48'N, 133˚51.30'E.
e. 42˚53.00'N, 133˚51.45'E.

Bukhta Kit

Area No. 278.—Area bounded by coastline and lines joining the following positions:

a. 43˚06.48'N, 134˚17.00'E.
b. 43˚04.00'N, 134˚17.00'E.
c. 43˚01.70'N, 134˚12.80'E.
d. 43˚02.35'N, 134˚10.46'E.

Zaliv Ol'gi

Area No. 17G (Gavan' Tikhaya Pristan').—Area bounded by lines joining the following positions:

a. 43˚44.17'N, 135˚16.10'E.
b. 43˚44.10'N, 135˚16.16'E.
c. 43˚44.00'N, 135˚15.95'E.
d. 43˚44.08'N, 135˚15.90'E.

Zaliv Vladimira

Area No. 265 (Southeast of Zaliv Vladimira).—Area bounded by lines joining the following positions:

a. 43˚41.50'N, 135˚34.50'E.
b. 43˚49.50'N, 135˚41.30'E.
c. 43˚48.00'N, 135˚46.00'E.
d. 43˚42.80'N, 135˚41.70'E.
e. 43˚41.50'N, 135˚37.80'E.

Area No. 17B (Entrance to Zaliv Vladimira).—Area bounded by lines joining the following positions:

a. 43˚54.30'N, 135˚31.70'E.
b. 43˚54.30'N, 135˚32.30'E.
c. 43˚54.00'N, 135˚32.30'E.
d. 43˚54.00'N, 135˚31.70'E.

Area No. 22.—Area bounded by lines joining the following positions:

a. 43˚56.96'N, 135˚29.08'E.
b. 43˚56.85'N, 135˚29.39'E.
c. 43˚56.68'N, 135˚29.62'E.
d. 43˚56.56'N, 135˚29.54'E.
e. 43˚56.68'N, 135˚29.12'E.

North of Poluostrov Balyuzek

Area No. 299.—Area bounded by the coastline and lines joining the following positions:

a. 44˚01.46'N, 135˚34.60'E.

b. 43˚56.00'N, 135˚31.10'E.

Southwest of Zaliv Oprichnik

Area No. 279.—Area bounded by the coastline and lines joining the following positions:

a. 44˚26.03'N, 135˚59.00'E.
b. 44˚25.66'N, 135˚00.22'E.
c. 44˚23.40'N, 135˚55.00'E.
d. 44˚25.00'N, 135˚54.40'E.

Gulf of Tartary

Area No. 361.—Area bounded by the coastline and lines joining the following positions:

a. 46˚28.50'N, 138˚13.00'E.
b. 46˚28.00'N, 138˚13.50'E.
c. 46˚25.00'N, 138˚11.00'E.
d. 46˚25.70'N, 138˚09.70'E.

Area No. 366 (Southwest of Mys Zolotoy).—Area bounded by a circle with a radius of 0.5 mile centered on position 47˚17.30'N, 138˚55.80'E.

Area No. 15 (South of Mys Karsnyy Partizan).—Area bounded by the coastline and lines joining the following positions:

a. 48˚57.50'N, 140˚21.96'E.
b. 48˚57.50'N, 140˚24.20'E.
c. 48˚54.40'N, 140˚24.20'E.
d. 48˚54.40'N, 140˚20.60'E.

Area No. 15A (De Kastri).—Area bounded by lines joining the following positions:

a. 51˚28.56'N, 140˚52.32'E.
b. 51˚28.86'N, 140˚52.16'E.
c. 51˚28.97'N, 140˚52.65'E.
d. 51˚28.66'N, 140˚52.81'E.

Area No. 215 (Ostrov Tyuleniy).—Area bounded by a circle with a radius of 12 miles centered on position 48˚30.20'N, 144˚37.60'E.

Avachinskiy Zaliv

Area No. 12 (Entrance to Avachinskiy Zaliv).—Area bounded by lines joining the following positions:

a. 52˚52.52'N, 158˚38.00'E.
b. 52˚52.88'N, 158˚40.00'E.
c. 52˚52.40'N, 158˚40.25'E.
d. 52˚52.00'N, 158˚38.09'E.

Area No. 13.—Area bounded by lines joining the following positions:

a. 52˚53.01'N, 158˚40.73'E.
b. 52˚53.19'N, 158˚41.70'E.
c. 52˚52.72'N, 158˚42.10'E.
d. 52˚52.52'N, 158˚41.00'E.

Area No. 220 (Avachinskiy Guba-Bukhta Krasheninnikova).—Area bounded by the coastline and lines joining the following positions:

a. 52˚53.27'N, 158˚30.40'E.
b. 52˚53.66'N, 158˚30.40'E.
c. 52˚53.65'N, 158˚31.00'E.
d. 52˚53.48'N, 158˚31.00'E.

Areas Prohibited for Anchoring, Fishing, Underwater and Dredging Operations, Underwater Explosions, and Navigating with a Trailing Anchor

La Perouse Strait

Area No. 72A (Southeast of Mys Kril'on).—Area bounded by the coastline and lines joining the following positions:

a. 45˚55.06'N, 142˚04.97'E.
b. 45˚54.42'N, 142˚06.02'E.
c. 45˚56.25'N, 142˚09.00'E.
d. 45˚55.27'N, 142˚10.30'E.
e. 45˚51.90'N, 142˚04.60'E.
f. 45˚53.60'N, 142˚02.60'E.
g. 45˚54.30'N, 142˚04.20'E.

Area No. 72B (Zaliv Aniva NE of Mys Kril'on).—Area bounded by lines joining the following positions:

a. 46˚05.5'N, 142˚27.5'E.
b. 46˚05.5'N, 142˚32.5'E.
c. 46˚00.5'N, 142˚32.5'E.
d. 46˚00.5'N, 142˚27.5'E.

Area No. 72V (Zaliv Aniva-Bukhta Lososey).—Area bounded by lines joining the following positions:

a. 46˚37.63'N, 142˚40.43'E.
b. 46˚37.68'N, 142˚40.81'E.
c. 46˚37.47'N, 142˚40.85'E.
d. 46˚37.43'N, 142˚40.48'E.

Area No. 312 (Zaliv Aniva S of Mys Tomari-Aniva).—Area bounded by the coastline and lines joining the following positions:

a. 46˚36.30'N, 142˚46.45'E.
b. 46˚33.70'N, 142˚49.20'E.
c. 46˚27.00'N, 142˚53.00'E.
d. 46˚26.20'N, 142˚50.00'E.
e. 46˚35.80'N, 142˚43.00'E.
f. 46˚37.00'N, 142˚45.50'E.
g. 46˚36.82'N, 142˚45.80'E.

Area No. 260 (Zaliv Aniva SE of Mys Tomari-Aniva).—Area bounded by lines joining the following positions:

a. 46˚31.60'N, 142˚52.40'E.
b. 46˚32.60'N, 142˚52.40'E.
c. 46˚32.60'N, 142˚54.40'E.
d. 46˚31.60'N, 142˚54.40'E.

Kuril Islands

Area No. 251 (Ostrov Shikotan-Bukhta Malokuril'skaya).—Area bounded by the coastline and lines joining the following positions:

a. 43˚53.30'N, 146˚49.50'E.
b. 43˚54.50'N, 146˚51.80'E.
c. 43˚53.35'N, 146˚58.60'E.
d. 43˚47.30'N, 147˚06.30'E.
e. 43˚41.80'N, 146˚59.00'E.
f. 43˚48.50'N, 146˚54.20'E.

Area No. 253 (Ostrov Shikotan-Bukhta Malokuril'skaya).—Area bounded by the coastline and lines joining the following positions:

a. 43˚52.36'N, 146˚48.86'E.
b. 43˚52.50'N, 146˚49.07'E.
c. 43˚52.45'N, 146˚49.20'E.
d. 43˚52.12'N, 146˚48.67'E.

Area No. 356 (Ostrov Iturup-Kuril'skiy Zaliv).—Area bounded by the coastline and lines joining the following positions:

a. 45˚13.01'N, 147˚49.53'E.
b. 45˚15.33'N, 147˚47.41'E.
c. 45˚15.65'N, 147˚48.01'E.
d. 45˚12.62'N, 147˚50.85'E.

Area No. 69B (Ostrov Iturup-Zaliv Kasatka).—Area bounded by the coastline and lines joining the following positions:

a. 44˚58.65'N, 147˚37.83'E.
b. 44˚57.01'N, 147˚37.80'E.
c. 44˚57.01'N, 147˚36.68'E.

Area No. 68 (Vtoroy Kuril'skiy Proliv).—Area bounded by the coastline and lines joining the following positions:

a. 50˚44.78'N, 156˚12.01'E.
b. 50˚44.78'N, 156˚11.47'E.
c. 50˚45.48'N, 156˚11.47'E.
d. 50˚45.48'N, 156˚11.89'E.

Area No. 69 (Vtoroy Kuril'skiy Proliv).—Area bounded by the coastline and lines joining the following positions:

a. 50˚40.50'N, 156˚08.70'E.
b. 50˚40.70'N, 156˚11.20'E.
c. 50˚40.50'N, 156˚12.20'E.
d. 50˚40.10'N, 156˚08.04'E.

Area No. 276 (Southeast of Ostrov Shumshu).—Area bounded by the coastline and lines joining the following positions:

a. 50˚38.56'N, 156˚24.52'E.
b. 50˚38.37'N, 156˚25.15'E.
c. 50˚33.10'N, 156˚26.30'E.
d. 50˚33.10'N, 156˚25.50'E.
e. 50˚38.11'N, 156˚24.45'E.

Area No. 354 (Ostrov Shumshu).—Area bounded by the coastline and lines joining the following positions:

a. 50˚45.23'N, 156˚07.70'E.
b. 50˚46.35'N, 156˚08.78'E.
c. 50˚48.10'N, 156˚13.42'E.
d. 51˚06.65'N, 156˚16.80'E.
e. 51˚24.65'N, 156˚27.00'E.
f. 51˚27.10'N, 156˚30.20'E.
g. 51˚23.80'N, 156˚31.45'E.
h. 51˚06.00'N, 156˚21.00'E.
i. 50˚58.00'N, 156˚21.50'E.
j. 50˚46.45'N, 156˚14.90'E.
k. 50˚46.23'N, 156˚13.60'E.
l. 50˚47.35'N, 156˚13.35'E.
m. 50˚45.94'N, 156˚09.65'E.
n. 50˚44.95'N, 156˚08.67'E.

Zaliv Petra Velikogo

Area No. 315 (Zaliv Pos'yeta SW of Poluostrova Gamova).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚33.86'N, 131˚09.67'E.

Area No. 67 (Ostrov Rimskogo-Korsakova S of Ostrov Bol'shoy Pelis).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚23.86'N, 131˚31.00'E.

Area No. 316 (Amurskiy Zaliv W of Mys Firsova).—Area bounded by a circle with a radius of 0.5 mile centered on position 43˚11.25'N, 131˚50.94'E.

Area No. 264 (Amurskiy Zaliv W of Gavan' Likhternaya).—Area bounded by the coastline and lines joining the following positions:

a. 43˚08.19'N, 131˚53.34'E.
b. 43˚08.28'N, 131˚52.41'E.
c. 43˚08.80'N, 131˚52.52'E.
d. 43˚08.68'N, 131˚53.37'E.
e. 43˚08.41'N, 131˚53.65'E.

Area No. 35 (Amurskiy Zaliv-Bukhta Novik).—Area bounded by the coastline and lines joining the following positions:

a. 43˚03.38'N, 131˚49.84'E.
b. 43˚03.42'N, 131˚50.24'E.
c. 43˚03.24'N, 131˚50.24'E.
d. 43˚03.21'N, 131˚49.81'E.

Area No. 122 (Ostrov Russkiy-Bukhta Novik).—Area bounded by the coastline and lines joining the following positions:

a. 43˚03.57'N, 131˚49.35'E.
b. 43˚03.52'N, 131˚50.07'E.
c. 43˚02.93'N, 131˚49.63'E.
d. 43˚02.98'N, 131˚48.60'E.
e. 43˚03.43'N, 131˚49.13'E.

Area No. 123 (Ostrov Russkiy-Bukhta Novik).—Area bounded by the coastline and lines joining the following positions:

a. 43˚02.33'N, 131˚51.48'E.
b. 43˚02.29'N, 131˚51.83'E.
c. 43˚01.57'N, 131˚52.05'E.
d. 43˚01.36'N, 131˚51.77'E.

Area No. 124 (Ostrov Russkiy-Bukhta Novik).—Area bounded by the coastline and lines joining the following positions:

a. 43˚00.50'N, 131˚52.65'E.
b. 43˚00.64'N, 131˚53.30'E.
c. 43˚00.44'N, 131˚53.33'E.
d. 43˚00.32'N, 131˚52.80'E.

Area No. 106 (Proliv Bosfor-Vostochnny).—Area bounded by the coastline and lines joining the following positions:

a. 43˚04.83'N, 131˚51.20'E.
b. 43˚04.71'N, 131˚51.31'E.
c. 43˚03.56'N, 131˚51.00'E.
d. 43˚04.02'N, 131˚49.85'E.
e. 43˚04.59'N, 131˚50.10'E.
f. 43˚04.68'N, 131˚50.40'E.

Area No. 108A (Ostrov Russkiy-Bukhta Voyevoda).—Area bounded by lines joining the following positions:

a. 43˚00.21'N, 131˚47.00'E.
b. 43˚00.05'N, 131˚47.22'E.
c. 42˚59.91'N, 131˚46.98'E.
d. 43˚00.08'N, 131˚46.75'E.

Area No. 109 (Proliv Starka).—Area bounded by the coastline and lines joining the following positions:

a. 42˚59.11'N, 131˚44.76'E.
b. 42˚58.89'N, 131˚45.04'E.
c. 42˚58.64'N, 131˚44.54'E.
d. 42˚58.98'N, 131˚44.52'E.

Area No. 180 (Ussuriyskiyv Zaliv SE of Ostrov Russkiy).—Area bounded by a circle with a radius of 0.8 mile centered on position 42˚52.02'N, 132˚01.50'E.

Area No. 126 (Southeast of Ostrov Russkiy).—Area bounded by lines joining the following positions:

a. 42˚54.02'N, 131˚47.99'E.
b. 42˚58.18'N, 131˚57.24'E.
c. 42˚58.65'N, 131˚56.80'E.
d. 42˚59.10'N, 131˚57.70'E.
e. 42˚58.58'N, 131˚58.14'E.
f. 42˚59.50'N, 132˚00.20'E.
g. 42˚57.89'N, 132˚02.27'E.
h. 42˚50.80'N, 131˚56.45'E.
i. 42˚49.00'N, 131˚49.60'E.
j. 42˚51.00'N, 131˚47.75'E.
k. 42˚52.64'N, 131˚49.25'E.

Area No. 102 (Proliv Askol'd).—Area bounded by the coastline and lines joining the following positions:

a. 42˚50.48'N, 132˚20.85'E.
b. 42˚48.70'N, 132˚20.85'E.
c. 42˚47.05'N, 132˚21.84'E.
d. 42˚46.45'N, 132˚22.98'E.
e. 42˚46.89'N, 132˚20.87'E.
f. 42˚46.78'N, 132˚20.27'E.
g. 42˚48.75'N, 132˚18.75'E.
h. 42˚45.82'N, 132˚15.21'E.
i. 42˚50.20'N, 132˚13.10'E.
j. 42˚52.10'N, 132˚17.70'E.

Area No. 99A (Approach to Zaliv Nakhodka).—Area bounded by lines joining the following positions:

a. 42˚49.92'N, 132˚20.85'E.
b. 42˚47.40'N, 132˚22.40'E.
c. 42˚45.60'N, 132˚26.00'E.
d. 42˚44.95'N, 132˚26.95'E.
e. 42˚43.55'N, 132˚30.50'E.
f. 42˚42.86'N, 132˚31.70'E.
g. 42˚42.95'N, 132˚40.93'E.
h. 42˚42.90'N, 132˚48.50'E.
i. 42˚43.10'N, 132˚50.50'E.
j. 42˚42.91'N, 132˚51.83'E.
k. 42˚42.97'N, 132˚55.33'E.
l. 42˚42.80'N, 132˚55.00'E.
m. 42˚42.43'N, 132˚55.00'E.
n. 42˚42.40'N, 132˚50.60'E.
o. 42˚42.34'N, 132˚48.50'E.
p. 42˚42.37'N, 132˚31.50'E.
q. 42˚43.00'N, 132˚30.20'E.
r. 42˚44.50'N, 132˚26.50'E.
s. 42˚45.28'N, 132˚25.44'E.
t. 42˚47.05'N, 132˚21.84'E.
u. 42˚48.70'N, 132˚20.85'E.

Area No. 230 (Proliv Askol'd).—Area bounded by lines joining the following positions:

a. 42˚48.60'N, 132˚26.50'E.
b. 42˚46.92'N, 132˚26.12'E.
c. 42˚46.67'N, 132˚23.86'E.
d. 42˚47.38'N, 132˚22.40'E.

Area No. 227 (Proliv Askol'd).—Area bounded by the coastline and lines joining the following positions:

a. 42˚47.78'N, 132˚28.08'E.
b. 42˚47.07'N, 132˚28.09'E.
c. 42˚46.82'N, 132˚29.80'E.
d. 42˚46.20'N, 132˚28.91'E.
e. 42˚47.32'N, 132˚26.22'E.
f. 42˚48.60'N, 132˚26.50'E.

Area No. 178 (Proliv Askol'd).—Area bounded by a circle with a radius of 1 mile centered on position 42˚46.30'N, 132˚25.10'E.

Area No. 179 (Proliv Askol'd).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚46.15'N, 132˚29.85'E.

Area No. 181 (Southeast of Ostrov Askol'd).—Area bounded by lines joining the following positions:

a. 42˚29.00'N, 132˚30.00'E.
b. 42˚29.00'N, 132˚37.30'E.
c. 42˚25.80'N, 132˚37.30'E.
d. 42˚24.80'N, 132˚30.00'E.

Area No. 182 (East of Ostrov Askol'd).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚45.20'N, 132˚27.85'E.

Area No. 183 (East of Ostrov Putyatina).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚48.12'N, 132˚34.66'E.

Area No. 100 (West Entrance of Zaliv Strelok).—Area bounded by the coastline and lines joining the following positions:

a. 42˚51.48'N, 132˚21.66'E.
b. 42˚52.23'N, 132˚23.78'E.
c. 42˚51.83'N, 132˚23.96'E.
d. 42˚51.50'N, 132˚23.50'E.
e. 42˚51.43'N, 132˚23.43'E.
f. 42˚51.10'N, 132˚21.10'E.

Area No. 120 (Zaliv Strelok).—Area bounded by the coastline and lines joining the following positions:

a. 42˚55.10'N, 132˚23.68'E.
b. 42˚55.00'N, 132˚24.52'E.
c. 42˚54.25'N, 132˚25.04'E.
d. 42˚53.84'N, 132˚24.42'E.

Area No. 118 (Zaliv Strelok).—Area bounded by the coastline and lines joining the following positions:

a. 42˚51.85'N, 132˚27.31'E.
b. 42˚51.70'N, 132˚30.68'E.
c. 42˚51.67'N, 132˚31.12'E.
d. 42˚51.76'N, 132˚31.67'E.
e. 42˚51.24'N, 132˚31.57'E.
f. 42˚50.94'N, 132˚30.05'E.
g. 42˚50.90'N, 132˚28.15'E.
h. 42˚51.12'N, 132˚27.10'E.
i. 42˚51.92'N, 132˚26.92'E.

Area No. 120A (Zaliv Strelok-Bukhta Abrek).—Area bounded by the coastline and lines joining the following positions:

a. 42˚55.74'N, 132˚24.07'E.
b. 42˚56.13'N, 132˚24.34'E.
c. 42˚56.24'N, 132˚24.23'E.
d. 42˚56.27'N, 132˚24.08'E.
e. 42˚56.21'N, 132˚23.84'E.
f. 42˚56.54'N, 132˚24.66'E.
g. 42˚56.54'N, 132˚24.61'E.
h. 42˚56.48'N, 132˚24.58'E.
i. 42˚56.36'N, 132˚24.71'E.
j. 42˚56.14'N, 132˚24.83'E.
k. 42˚56.12'N, 132˚24.84'E.

l. 42˚55.51'N, 132˚24.84'E.
m. 42˚55.16'N, 132˚24.41'E.

Area No. 99 (East Entrance of Zaliv Strelok).—Area bounded by the coastline and lines joining the following positions:

a. 42˚48.62'N, 132˚27.78'E.
b. 42˚49.28'N, 132˚28.87'E.
c. 42˚48.60'N, 132˚32.76'E.
d. 42˚46.38'N, 132˚32.70'E.
e. 42˚47.07'N, 132˚28.09'E.
f. 42˚47.78'N, 132˚28.08'E.

Area No. 240 (Zaliv Strelok-Bukhta Anny).—Area bounded by the coastline and lines joining the following positions:

a. 42˚51.72'N, 132˚33.89'E.
b. 42˚51.25'N, 132˚34.03'E.
c. 42˚51.19'N, 132˚34.05'E.
d. 42˚51.16'N, 132˚34.06'E.
e. 42˚50.77'N, 132˚34.03'E.
f. 42˚50.75'N, 132˚33.96'E.
g. 42˚51.16'N, 132˚34.00'E.
h. 42˚51.73'N, 132˚33.83'E.

Area No. 98B (East of Ostrov Askol'd).—Area bounded by a circle with a radius of 0.5 mile centered on position 42˚43.86'N, 132˚36.85'E.

Area No. 313 (Approach to Zaliv Nakhodka).—Area bounded by the coastline and lines joining the following positions:

a. 42˚40.97'N, 133˚05.43'E.
b. 42˚37.20'N, 133˚06.00'E.
c. 42˚32.00'N, 133˚00.00'E.
d. 42˚32.00'N, 132˚41.78'E.
e. 42˚37.60'N, 132˚39.60'E.
f. 42˚41.93'N, 133˚00.80'E.

Area No. 94 (Approach to Zaliv Nakhodka).—Area bounded by lines joining the following positions:

a. 42˚40.0'N, 132˚52.0'E.
b. 42˚40.0'N, 133˚04.0'E.
c. 42˚35.5'N, 133˚04.0'E.
d. 42˚35.5'N, 132˚52.0'E.

Area No. 98 (Zaliv Nakhodka).—Area bounded by the coastline and lines joining the following positions:

a. 42˚45.03'N, 132˚52.32'E.
b. 42˚44.34'N, 133˚01.02'E.
c. 42˚43.98'N, 133˚01.38'E.
d. 42˚43.48'N, 133˚00.80'E.
e. 42˚43'56'N, 132˚58.80'E.
f. 42˚42.71'N, 132˚58.85'E.
g. 42˚42.20'N, 133˚00.55'E.
h. 42˚40.70'N, 133˚02.81'E.
i. 42˚39.80'N, 133˚02.81'E.
j. 42˚39.80'N, 132˚55.00'E.
k. 42˚42.80'N, 132˚55.00'E.
l. 42˚43.57'N, 132˚56.47'E.
m. 42˚44.35'N, 132˚52.33'E.

Area No. 95 (Zaliv Nakhodka-Entrance to Ozero Vtoroye).—Area bounded by the coastline and lines joining the following positions:

a. 42˚43.00'N, 133˚01.40'E.
b. 42˚42.98'N, 133˚01.47'E.
c. 42˚42.95'N, 133˚01.46'E.
d. 42˚42.94'N, 133˚01.38'E.

Area No. 245 (Near Mys Ostrovnoy).—Area bounded by the coastline and lines joining the following positions:

a. 42˚48.50'N, 133˚43.54'E.
b. 42˚49.00'N, 133˚51.85'E.
c. 42˚47.40'N, 133˚47.50'E.
d. 42˚47.01'N, 133˚47.40'E.
e. 42˚49.20'N, 133˚49.42'E.
f. 42˚49.20'N, 133˚49.42'E.

Zaliv Petra Velikogo to Mys Belkina

Area No. 92A (Northeast of Mys Nizmennyy).—Area bounded by the coastline and lines joining the following positions:

a. 43˚32.04'N, 135˚08.62'E.
b. 43˚32.25'N, 135˚11.20'E.
c. 43˚30.98'N, 135˚10.22'E.
d. 43˚31.35'N, 135˚09.08'E.

Area No. 92 (Zaliv Ol'gi N of Ostrov Chikacheva).—Area bounded by the coastline and lines joining the following positions:

a. 43˚41.25'N, 135˚16.29'E.
b. 43˚41.17'N, 135˚16.60'E.
c. 43˚40.87'N, 135˚16.64'E.
d. 43˚40.63'N, 135˚16.47'E.

Area No. 263 (Southeast of Zaliv Vladimira).—Area bounded by the coastline and lines joining the following positions:

a. 43˚52.20'N, 135˚30.48'E.
b. 43˚49.98'N, 135˚41.30'E.
c. 43˚41.50'N, 135˚34.50'E.
d. 43˚41.50'N, 135˚37.80'E.
e. 43˚44.50'N, 135˚46.45'E.
f. 43˚38.70'N, 135˚47.25'E.
g. 43˚37.20'N, 135˚37.00'E.
h. 43˚46.30'N, 135˚26.00'E.

Area No. 90 (East of Zaliv Vladimira).—Area bounded by the coastline and lines joining the following positions:

a. 43˚55.32'N, 135˚31.17'E.
b. 43˚56.37'N, 135˚36.47'E.
c. 43˚54.95'N, 135˚36.45'E.
d. 43˚57.50'N, 135˚51.40'E.
e. 43˚56.10'N, 135˚51.70'E.
f. 43˚53.15'N, 135˚34.60'E.
g. 43˚52.68'N, 135˚34.08'E.
h. 43˚52.42'N, 135˚30.54'E.
i. 43˚53.75'N, 135˚30.02'E.
j. 43˚54.07'N, 135˚30.50'E.
k. 43˚56.20'N, 135˚29.83'E.
l. 43˚56.20'N, 135˚30.51'E.

Area No. 89 (Zaliv Vladimira-Bukhta Severnaya).—Area bounded by the coastline and lines joining the following positions:

a. 43˚57.33'N, 135˚28.26'E.
b. 43˚57.19'N, 135˚28.48'E.
c. 43˚56.93'N, 135˚28.28'E.
d. 43˚57.08'N, 135˚28.00'E.

Area No. 88A (South of Bukhta Rudnaya).—Area bounded by the coastline and lines joining the following positions:

a. 43˚20.70'N, 135˚50.40'E.
b. 43˚13.40'N, 135˚58.70'E.

c. 43˚06.30'N, 135˚48.60'E.
d. 43˚11.80'N, 135˚41.20'E.

Area No. 87 (East of Bukhta Serebryanka).—Area bounded by lines joining the following positions:

a. 45˚02.50'N, 136˚41.10'E.
b. 45˚03.80'N, 136˚43.61'E.
c. 45˚02.80'N, 136˚44.90'E.
d. 45˚01.61'N, 136˚42.38'E.
e. 44˚58.90'N, 136˚41.38'E.
f. 44˚59.74'N, 136˚39.32'E.
g. 45˚00.80'N, 136˚40.20'E.
h. 45˚00.90'N, 136˚37.60'E.
i. 45˚01.66'N, 136˚38.74'E.
j. 45˚01.65'N, 136˚40.50'E.
k. 45˚02.20'N, 136˚40.00'E.

Area No. 86 (Approach to Mys Mayachnyy).—Area bounded by lines joining the following positions:

a. 45˚28.25'N, 137˚13.90'E.
b. 45˚27.40'N, 137˚18.15'E.
c. 45˚26.50'N, 137˚19.40'E.
d. 45˚18.42'N, 137˚07.83'E.
e. 45˚19.32'N, 137˚06.58'E.
f. 45˚25.28'N, 137˚15.10'E.
g. 45˚27.95'N, 137˚13.07'E.

Gulf of Tartary

Area No. 85 (East Mys Belkina).—Area bounded by lines joining the following positions:

a. 45˚51.75'N, 137˚46.10'E.
b. 45˚51.44'N, 137˚46.70'E.
c. 45˚49.65'N, 137˚44.80'E.
d. 45˚48.60'N, 137˚42.97'E.
e. 45˚48.55'N, 137˚42.30'E.
f. 45˚46.55'N, 137˚39.70'E.
g. 45˚46.25'N, 137˚39.10'E.
h. 45˚48.95'N, 137˚41.85'E.
i. 45˚49.10'N, 137˚42.70'E.
j. 45˚50.00'N, 137˚44.25'E.

Area No. 84 (East of Mys Olimpiady).—Area bounded by the coastline and lines joining the following positions:

a. 46˚16.05'N, 138˚05.88'E.
b. 46˚16.25'N, 138˚09.20'E.
c. 46˚15.88'N, 138˚10.30'E.
d. 46˚12.76'N, 138˚08.05'E.
e. 46˚13.13'N, 138˚06.70'E.
f. 46˚15.15'N, 138˚07.20'E.
g. 46˚15.15'N, 138˚05.82'E.

Area No. 83 (Southeast of Mys Zolotoy).—Area bounded by lines joining the following positions:

a. 47˚20.40'N, 139˚02.20'E.
b. 47˚20.15'N, 139˚02.90'E.
c. 47˚17.20'N, 139˚00.50'E.
d. 47˚16.10'N, 139˚58.05'E.
e. 47˚15.55'N, 139˚57.40'E.
f. 47˚15.80'N, 139˚56.80'E.
g. 47˚16.50'N, 139˚57.60'E.
h. 47˚17.70'N, 139˚00.20'E.

Area No. 82 (Southeast of Bukhta Grossevicha).—Area bounded by lines joining the following positions:

a. 47˚58.15'N, 139˚36.60'E.
b. 47˚57.70'N, 139˚36.90'E.
c. 47˚56.40'N, 139˚33.20'E.
d. 47˚57.00'N, 139˚32.60'E.
e. 47˚57.90'N, 139˚33.52'E.

Area No. 80 (Approach to Zaliv Sovetskaya Gavan).—Area bounded by the coastline and lines joining the following positions:

a. 49˚03.98'N, 140˚19.24'E.
b. 49˚05.00'N, 140˚22.40'E.
c. 49˚07.90'N, 140˚23.65'E.
d. 49˚07.90'N, 140˚24.70'E.
e. 49˚05.10'N, 140˚24.00'E.
f. 49˚05.10'N, 140˚27.30'E.
g. 48˚58.58'N, 140˚27.00'E.
h. 48˚56.70'N, 140˚26.70'E.
i. 48˚43.00'N, 140˚21.00'E.
j. 48˚43.75'N, 140˚17.75'E.
k. 48˚59.65'N, 140˚24.90'E.
l. 49˚02.75'N, 140˚23.75'E.
m. 49˚03.20'N, 140˚19.91'E.

Area No. 322 (Bukhta Situan).—Area bounded by lines joining the following positions:

a. 48˚59.60'N, 140˚21.30'E.
b. 49˚00.00'N, 140˚21.30'E.
c. 49˚00.00'N, 140˚21.56'E.
d. 49˚59.82'N, 140˚22.00'E.
e. 49˚59.60'N, 140˚22.00'E.

Area No. 75A (Entrance to Zaliv Sovetskaya Gavan).—Area bounded by the coastline and lines joining the following positions:

a. 49˚03.20'N, 140˚19.91'E.
b. 49˚02.75'N, 140˚23.75'E.
c. 49˚01.48'N, 140˚20.92'E.
d. 49˚01.40'N, 140˚19.97'E.
e. 49˚02.20'N, 140˚18.80'E.

Area No. 77 (Zaliv Sovetskaya Gavan).—Area bounded by the coastline and lines joining the following positions:

a. 49˚00.34'N, 140˚16.30'E.
b. 49˚00.59'N, 140˚16.63'E.
c. 49˚00.00'N, 140˚17.34'E.
d. 48˚59.62'N, 140˚17.52'E.
e. 48˚59.49'N, 140˚16.88'E.
f. 48˚59.39'N, 140˚15.38'E.
g. 48˚59.67'N, 140˚15.36'E.
h. 48˚59.80'N, 140˚16.68'E.

Area No. 78 (Zaliv Sovetskaya Gavan).—Area bounded by the coastline and lines joining the following positions:

a. 48˚58.21'N, 140˚15.61'E.
b. 48˚58.38'N, 140˚15.63'E.
c. 48˚58.47'N, 140˚16.35'E.
d. 48˚58.33'N, 140˚16.25'E.

Area No. 79 (Zaliv Sovetskaya Gavan).—Area bounded by the coastline and lines joining the following positions:

a. 48˚59.07'N, 140˚14.21'E.
b. 48˚59.19'N, 140˚14.50'E.
c. 48˚58.40'N, 140˚15.57'E.
d. 48˚58.33'N, 140˚15.27'E.

Area No. 76 (Zaliv Sovetskaya Gavan).—Area bounded by the coastline and lines joining the following positions:

a. 49˚01.59'N, 140˚17.16'E.

b. 49˚01.59'N, 140˚17.83'E.
c. 49˚01.48'N, 140˚17.95'E.
d. 49˚01.45'N, 140˚17.93'E.
e. 49˚01.46'N, 140˚16.95'E.
f. 49˚01.53'N, 140˚16.97'E.

Area No. 115 (Zaliv Sovetskaya Gavan-Bukhta Zapadnaya).—Area bounded by the coastline and lines joining the following positions:

a. 49˚00.24'N, 140˚12.89'E.
b. 49˚00.53'N, 140˚12.78'E.
c. 49˚00.66'N, 140˚13.03'E.
d. 49˚00.44'N, 140˚13.34'E.

Area No. 116 (Zaliv Sovetskaya Gavan-Bukhta Zapadnaya).—Area bounded by the coastline and lines joining the following positions:

a. 49˚01.03'N, 140˚13.69'E.
b. 49˚01.12'N, 140˚13.99'E.
c. 49˚00.80'N, 140˚14.08'E.
d. 49˚00.80'N, 140˚13.83'E.

Area No. 117 (Zaliv Sovetskaya Gavan-Bukhta Zapadnaya).—Area bounded by the coastline and lines joining the following positions:

a. 49˚01.56'N, 140˚16.88'E.
b. 49˚01.02'N, 140˚16.93'E.
c. 49˚01.01'N, 140˚15.58'E.
d. 49˚01.37'N, 140˚15.83'E.

Area No. 262 (East of Zaliv Sovetskaya Gavan).—Area bounded by the coastline and lines joining the following positions:

a. 49˚02.00'N, 140˚27.00'E.
b. 49˚03.50'N, 140˚27.00'E.
c. 49˚03.50'N, 140˚28.50'E.
d. 49˚02.00'N, 140˚28.50'E.

Area No. 73 (Estuary of Reki Tumnin).—Area bounded by the coastline and lines joining the following positions:

a. 49˚17.08'N, 140˚22.01'E.
b. 49˚17.22'N, 140˚22.16'E.
c. 49˚17.16'N, 140˚22.54'E.
d. 49˚98.00'N, 140˚22.41'E.

Area No. 69A (Zaliv Chikacheva—Approaches to DeKastri between Mys Kloster Kamp and Mys Kastri).—Area bounded by the coastline and lines joining the following positions:

a. 51˚29.45'N, 140˚50.32'E.
b. 51˚29.10'N, 140˚50.48'E.
c. 51˚28.73'N, 140˚51.12'E.
d. 51˚28.56'N, 140˚52.32'E.
e. 51˚28.52'N, 140˚52.16'E.
f. 51˚28.52'N, 140˚52.65'E.
g. 51˚29.51'N, 140˚51.62'E.

An area bounded by lines joining the following positions:

a. 51˚27.98'N, 140˚52.07'E.
b. 51˚29.02'N, 140˚49.54'E.
c. 51˚29.24'N, 140˚49.82'E.
d. 51˚27.22'N, 140˚52.26'E.
e. 51˚27.52'N, 140˚53.74'E.
f. 51˚27.69'N, 140˚53.56'E.

Area No. 281 (Approach to Kholmsk).—Area bounded by a circle with a radius of 0.3 mile centered on position 47˚03.9'N, 142˚00.0'E.

Area No. 81 (Approach to Uglegorsk).—Area bounded by the coastline and lines joining the following positions:

a. 49˚03.61'N, 142˚01.71'E.
b. 49˚02.60'N, 141˚54.80'E.
c. 49˚05.20'N, 141˚54.60'E.
d. 49˚04.20'N, 142˚01.62'E.

Eastern Shore of Ostrov Sakhalin

Area No. 363 (Northeast of Mys Nizkiy).—Area bounded by the coastline and lines joining the following positions:

a. 50˚05.50'N, 143˚56.20'E.
b. 50˚05.50'N, 144˚03.60'E.
c. 49˚59.00'N, 144˚03.60'E.
d. 49˚59.00'N, 143˚59.10'E.

Area No. 266 (Reyd Menaputsy).—Area bounded by the coastline and lines joining the following positions:

a. 46˚26.00'N, 143˚34.05'E.
b. 46˚37.00'N, 143˚47.00'E.
c. 46˚22.00'N, 143˚51.00'E.
d. 46˚23.00'N, 143˚36.70'E.

Sakhalinskiy Zaliv

Area No. 43 (Zaliv Biakal-Port Moskal'vo).—Area bounded by the coastline and lines joining the following positions:

a. 53˚34.69'N, 142˚28.75'E.
b. 53˚34.68'N, 142˚29.82'E.
c. 53˚34.29'N, 142˚29.76'E.
d. 53˚34.31'N, 142˚28.90'E.

Poluostrov Shmidta (Mys Marii)

Area bounded by a circle with a radius of 0.6 mile centered on position 54˚19.30'N, 142˚14.50'E.

Note.—This area has not been numbered.

Amurskiy Liman

Area No. 335 (Proliv Nevel'skogo NE of Mys Ekateriny).—Area bounded by lines joining the following positions:

a. 51˚54.00'N, 141˚25.26'E.
b. 51˚55.22'N, 141˚25.45'E.
c. 51˚57.30'N, 141˚27.21'E.
d. 51˚57.90'N, 141˚27.51'E.
e. 51˚57.90'N, 141˚29.13'E.
f. 51˚57.30'N, 141˚28.80'E.
g. 51˚55.22'N, 141˚27.05'E.
h. 51˚54.00'N, 141˚26.89'E.

Area No. 323 (Proliv Nevel'skogo E of Mys Murav'yeva).—Area bounded by lines joining the following positions:

a. 52˚05.25'N, 141˚31.90'E.
b. 52˚07.51'N, 141˚32.50'E.
c. 52˚11.05'N, 141˚34.50'E.
d. 52˚11.42'N, 141˚36.70'E.
e. 52˚05.25'N, 141˚33.00'E.

Area No. 71 (Proliv Nevel'skogo).—Area bounded by lines joining the following positions:

a. 52˚14.22'N, 141˚31.40'E.
b. 52˚14.40'N, 141˚32.55'E.
c. 52˚14.20'N, 141˚39.10'E.
d. 52˚11.98'N, 141˚40.00'E.
e. 52˚10.58'N, 141˚31.70'E.

Estuary of Reki Amur

Area No. 214 (Southwest of Ostrov Vospri).—Area bounded by the coastline and lines joining the following positions:

a. 53˚04.41'N, 140˚48.06'E.
b. 53˚04.97'N, 140˚49.46'E.
c. 53˚04.06'N, 140˚50.37'E.
d. 53˚03.46'N, 140˚48.76'E.

Area No. 213 (Northeast of Ostrov Vospri).—Area bounded by the coastline and lines joining the following positions:

a. 53˚05.92'N, 140˚51.82'E.
b. 53˚05.18'N, 140˚52.42'E.
c. 53˚04.62'N, 140˚50.99'E.
d. 53˚05.11'N, 140˚49.81'E.

Area No. 261 (Approaches to Port Nikolayevsk).—Area bounded by the coastline and lines joining the following positions:

a. 53˚08.48'N, 140˚46.30'E.
b. 53˚07.70'N, 140˚46.54'E.
c. 53˚07.61'N, 140˚45.74'E.
d. 53˚08.39'N, 140˚45.50'E.

Tauyskaya Guba

Area No. 70 (Bukhta Nagayeva).—Area bounded by lines joining the following positions:

a. 59˚33.60'N, 150˚42.40'E.
b. 59˚33.60'N, 150˚43.20'E.
c. 59˚33.40'N, 150˚43.20'E.
d. 59˚33.40'N, 150˚42.40'E.

Area No. 69V (Bukhta Nagayeva).—Area bounded by the coastline and lines joining the following positions:

a. 59˚31.69'N, 150˚44.62'E.
b. 59˚32.35'N, 150˚44.62'E.
c. 59˚32.35'N, 150˚46.10'E.
d. 59˚32.28'N, 150˚46.25'E.

Poluostrov Kamchatka

Area No. 354 (Ostrov Paramushir).—Area bounded by the coastline and lines joining the following positions:

a. 50˚45.23'N, 156˚07.70'E.
b. 50˚46.35'N, 156˚08.78'E.
c. 50˚48.10'N, 156˚13.42'E.
d. 51˚06.65'N, 156˚16.80'E.
e. 51˚24.65'N, 156˚27.00'E.
f. 51˚27.00'N, 156˚30.20'E.
g. 51˚23.80'N, 156˚31.45'E.
h. 51˚06.00'N, 156˚21.00'E.
i. 50˚58.00'N, 156˚21.50'E.
j. 50˚46.45'N, 156˚14.90'E.
k. 50˚46.23'N, 156˚13.60'E.
l. 50˚47.35'N, 156˚13.35'E.
m. 50˚45.94'N, 156˚09.65'E.
n. 50˚44.95'N, 156˚08.67'E.

Avachinskiy Zaliv

Area No. 294 (Avachinskaya Guba-Bukhta Rakovaya).—Area bounded by the coastline and lines joining the following positions:

a. 52˚58.77'N, 158˚40.32'E.
b. 52˚58.62'N, 158˚40.11'E.
c. 52˚58.66'N, 158˚40.06'E.
d. 52˚58.79'N, 158˚40.26'E.

Area No. 296 (Southeast of Mys Povorotnyy).—Area bounded by the coastline and lines joining the following positions:

a. 52˚18.28'N, 158˚33.31'E.
b. 52˚16.70'N, 158˚52.40'E.
c. 52˚07.90'N, 158˚43.40'E.
d. 52˚13.65'N, 158˚24.80'E.

Area No. 314 (Avachinskaya Guba N of Mys Kosa).—Area bounded by lines joining the following positions:

a. 52˚55.20'N, 158˚34.16'E.
b. 52˚55.53'N, 158˚34.16'E.
c. 52˚55.53'N, 158˚35.09'E.
d. 52˚55.20'N, 158˚35.09'E.

Area No. 60 (Avachinskaya Guba-Bukhta Krasheninnikova).—Area bounded by the coastline and lines joining the following positions:

a. 52˚53.72'N, 158˚26.87'E.
b. 52˚55.36'N, 158˚28.62'E.
c. 52˚54.95'N, 158˚29.57'E.
d. 52˚53.72'N, 158˚28.39'E.

Area No. 61 (Avachinskaya Guba between Bukhta Mokhovaya and Bukhta Krasheninnikova).—Area bounded by the coastline and lines joining the following positions:

a. 52˚57.62'N, 158˚27.40'E.
b. 52˚56.20'N, 158˚28.78'E.
c. 52˚55.85'N, 158˚38.65'E.
d. 52˚55.64'N, 158˚38.14'E.
e. 52˚55.64'N, 158˚37.40'E.
f. 52˚57.19'N, 158˚35.49'E.

Area No. 62 (Avachinskaya Guba-Bukhta Rakovaya).—Area bounded by the coastline and lines joining the following positions:

a. 52˚58.60'N, 158˚40.62'E.
b. 52˚58.50'N, 158˚40.80'E.
c. 52˚58.48'N, 158˚40.71'E.
d. 52˚58.52'N, 158˚40.53'E.

Area No. 62B (Avachinskaya Guba-Bukhta Rakovaya).—Area bounded by the coastline and lines joining the following positions:

a. 52˚57.82'N, 158˚41.92'E.
b. 52˚57.71'N, 158˚42.12'E.
c. 52˚57.61'N, 158˚42.13'E.
d. 52˚57.51'N, 158˚41.84'E.
e. 52˚57.74'N, 158˚41.76'E.

Area No. 62V (Avachinskaya Guba-Bukhta Rakovaya).—Area bounded by the coastline and lines joining the following positions:

a. 52˚57.98'N, 158˚40.73'E.
b. 52˚57.90'N, 158˚40.50'E.
c. 52˚57.98'N, 158˚40.38'E.
d. 52˚58.10'N, 158˚40.72'E.

Area No. 63 (Avachinskaya Guba between Poluostrov Krasheninnikova and Bukhta Rakovaya).—Area bounded by the coastline and lines joining the following positions:

a. 52˚55.62'N, 158˚31.56'E.
b. 52˚57.38'N, 158˚34.46'E.
c. 52˚59.00'N, 158˚37.60'E.

d. 52˚59.13'N, 158˚39.42'E.
e. 52˚58.88'N, 158˚39.90'E.
f. 52˚58.00'N, 158˚39.61'E.
g. 52˚58.19'N, 158˚39.00'E.
h. 52˚58.55'N, 158˚39.00'E.
i. 52˚55.13'N, 158˚32.21'E.

Area No. 64 (Entrance to Avachinskaya Guba).—Area bounded by the coastline and lines joining the following positions:

a. 52˚55.12'N, 158˚36.89'E.
b. 52˚57.47'N, 158˚38.60'E.
c. 52˚56.40'N, 158˚39.65'E.
d. 52˚54.13'N, 158˚38.03'E.

Area No. 65 (Entrance to Avachinskaya Guba).—Area bounded by the coastline and lines joining the following positions:

a. 52˚56.40'N, 158˚39.65'E.
b. 52˚54.72'N, 158˚40.75'E.
c. 52˚53.12'N, 158˚42.14'E.
d. 52˚52.05'N, 158˚40.60'E.
e. 52˚55.35'N, 158˚38.92'E.

Area No. 66 (Approaches to Avachinskaya Guba).—Area bounded by the coastline and lines joining the following positions:

a. 52˚57.50'N, 158˚48.50'E.
b. 52˚52.45'N, 158˚57.45'E.
c. 52˚52.45'N, 159˚06.15'E.
d. 52˚42.00'N, 159˚06.15'E.
e. 52˚42.00'N, 158˚49.00'E.
f. 52˚47.13'N, 158˚49.00'E.
g. 52˚55.00'N, 158˚45.30'E.

Area No. 67A (North part of Avachinskaya Zaliv between Mys Pervyy and Mys Shipunskiy).—Area bounded by the coastline and lines joining the following positions:

a. 52˚57.10'N, 158˚47.86'E.
b. 52˚57.20'N, 158˚49.62'E.
c. 52˚59.15'N, 158˚51.90'E.
d. 52˚59.75'N, 158˚51.56'E.
e. 53˚00.20'N, 158˚52.15'E.
f. 52˚59.51'N, 158˚52.90'E.
g. 53˚01.05'N, 158˚55.60'E.
h. 53˚04.08'N, 159˚07.00'E.
i. 53˚11.78'N, 159˚39.00'E.
j. 53˚13.35'N, 159˚41.85'E.
k. 53˚12.18'N, 159˚44.70'E.
l. 53˚11.18'N, 159˚43.20'E.
m. 53˚06.68'N, 159˚57.51'E.
n. 53˚06.25'N, 160˚00.00'E.
o. 53˚02.00'N, 160˚00.00'E.
p. 53˚04.29'N, 159˚57.30'E.
q. 53˚08.75'N, 159˚43.80'E.
r. 53˚09.50'N, 159˚38.50'E.
s. 53˚03.25'N, 159˚13.80'E.
t. 53˚00.45'N, 159˚02.00'E.
u. 53˚00.70'N, 158˚59.70'E.
v. 53˚58.90'N, 158˚55.70'E.
w. 52˚51.18'N, 158˚45.80'E.
x. 52˚54.20'N, 158˚48.20'E.
y. 52˚56.03'N, 158˚46.70'E.

Area No. 74 (Southeast part of Poluostrov Shipunskiy).—Area bounded by the coastline and lines joining the following positions:

a. 53˚08.68'N, 160˚03.51'E.
b. 52˚51.20'N, 160˚26.20'E.
c. 52˚45.40'N, 160˚08.50'E.
d. 53˚10.40'N, 159˚48.09'E.

Area No. 75 (East entrance to Avachinskaya Guba).—Area bounded by the coastline and lines joining the following positions:

a. 52˚57.00'N, 158˚47.80'E.
b. 52˚46.00'N, 159˚05.00'E.
c. 52˚41.50'N, 158˚50.50'E.
d. 52˚54.70'N, 158˚90.90'E.

Area No. 91 (Avachinskaya Guba-Bukhta Krasheninnikova).—Area bounded by the coastline and lines joining the following positions:

a. 52˚55.85'N, 158˚29.13'E.
b. 52˚57.01'N, 158˚28.00'E.
c. 52˚57.75'N, 158˚30.00'E.
d. 52˚55.82'N, 158˚30.00'E.

Area No. 280 (Avachinskaya Guba-Bukhta Krasheninnikova).—Area bounded by the coastline and lines joining the following positions:

a. 52˚55.50'N, 158˚24.92'E.
b. 52˚55.50'N, 158˚26.30'E.
c. 52˚55.20'N, 158˚26.30'E.
d. 52˚55.20'N, 158˚25.12'E.

Kronotskiy Zaliv

Area No. 59 (Avachinskaya Guba-Bukhta Rakovaya).—Area bounded by the coastline and lines joining the following positions:

a. 53˚15.89'N, 159˚54.43'E.
b. 53˚15.60'N, 159˚55.94'E.
c. 53˚15.38'N, 159˚56.71'E.
d. 53˚15.03'N, 159˚57.60'E.
e. 53˚14.77'N, 159˚57.34'E.
f. 53˚15.33'N, 159˚55.72'E.
g. 53˚15.58'N, 159˚54.43'E.

Anadyrskiy Zaliv

Area No. 58 (Port Anadyr').—Area bounded by the coastline and lines joining the following positions:

a. 64˚44.14'N, 177˚31.77'E.
b. 64˚45.59'N, 177˚31.63'E.
c. 64˚45.68'N, 177˚31.83'E.
d. 64˚45.56'N, 177˚32.10'E.
e. 64˚44.12'N, 177˚32.25'E.
f. 64˚44.03'N, 177˚32.10'E.

Area No. 289 (Bukhta Provideniya-Entrance to Bukhta Komsomol'skaya).—Area bounded by the coastline and lines joining the following positions:

a. 64˚24.33'N, 173˚15.98'E.
b. 64˚24.42'N, 173˚16.23'E.
c. 64˚25.23'N, 173˚15.55'E.
d. 64˚25.22'N, 173˚14.48'E.
e. 64˚24.20'N, 173˚15.23'E.

Area No. 290 (Bukhta Provideniya-Port Provideniya).—Area bounded by the coastline and lines joining the following positions:

a. 64˚25.57'N, 173˚13.07'E.
b. 64˚25.00'N, 173˚12.78'E.
c. 64˚24.83'N, 173˚13.47'E.
d. 64˚24.83'N, 173˚14.77'E.
e. 64˚24.22'N, 173˚14.48'E.

Inadequately Surveyed Areas

Northwest of Ostrov Paramushir

Area No. 23.—Area bounded by lines joining the following positions:

a. 50˚44.0'N, 155˚48.0'E.
b. 50˚46.0'N, 155˚46.0'E.
c. 50˚49.0'N, 155˚53.0'E.
d. 50˚47.0'N, 155˚53.0'E.

Kamchatskiy Proliv

Area No. 30.—Area bounded by lines joining the following positions:

a. 56˚05.0'N, 163˚12.0'E.
b. 56˚07.0'N, 163˚12.0'E.
c. 56˚07.0'N, 163˚19.0'E.
d. 56˚05.0'N, 163˚19.0'E.

Area No. 32.—Area bounded by lines joining the following positions:

a. 55˚36.0'N, 164˚46.0'E.
b. 55˚43.0'N, 164˚50.0'E.
c. 55˚35.0'N, 165˚33.0'E.
d. 55˚27.0'N, 165˚28.0'E.

Komandorskiye Ostrov

Area No. 34 (Ostrov Beringa).—Area bounded by lines joining the following positions:

a. 55˚20.0'N, 167˚06.0'E.
b. 55˚28.0'N, 167˚06.0'E.
c. 55˚28.0'N, 167˚32.0'E.
d. 55˚20.0'N, 167˚32.0'E.

Karaginskiy Zaliv

Area No. 37 (Ostrov Karaginskiy).—Area bounded by lines joining the following positions:

a. 59˚04.0'N, 165˚54.0'E.
b. 59˚14.0'N, 165˚54.0'E.
c. 59˚14.0'N, 165˚22.0'E.
d. 59˚04.0'N, 165˚22.0'E.

Anadyrskiy Zaliv

Area No. 41.—Area bounded by lines joining the following positions:

a. 62˚28.0'N, 179˚40.0'W.
b. 63˚04.0'N, 179˚52.0'W.
c. 63˚39.0'N, 179˚3.05'W.
d. 63˚39.0'N, 180˚00.0'W.
e. 63˚58.0'N, 180˚00.0'W.
f. 63˚58.0'N, 178˚30.0'W.
g. 64˚17.0'N, 178˚30.0'W.
h. 64˚17.0'N, 176˚30.0'W.
i. 64˚50.0'N, 176˚30.0'W.
j. 64˚15.0'N, 174˚34.0'W.
k. 64˚00.0'N, 174˚34.0'W.
l. 63˚55.0'N, 174˚50.0'W.

Eastern Shore of Ostrov Sakhalin

Area No. 42 (Zaliv Terpeniya).—Area bounded by lines joining the following positions:

a. 47˚24.0'N, 143˚29.0'E.
b. 47˚54.0'N, 143˚03.0'E.
c. 48˚00.0'N, 144˚24.0'E.
d. 47˚39.0'N, 144˚21.0'E.

Area No. 215A (Southern end of Poluostrov Terpeniya).—The area is split into two parts.

Part 1 is an area bounded by the coastline and lines joining the following positions:

a. 48˚46.5'N, 144˚42.1'E.
b. 48˚34.8'N, 145˚16.9'E.
c. 48˚14.7'N, 145˚33.8'E.
d. 48˚03.7'N, 145˚18.9'E.
e. 48˚18.2'N, 144˚38.1'E.

Part 2 is an area bounded by the coastline and lines joining the following positions:

a. 48˚46.0'N, 144˚39.2'E.
b. 48˚46.0'N, 144˚30.3'E.
c. 48˚41.0'N, 144˚29.9'E.

Ships of more than 1,000 tons carrying oil and/or dangerous cargo, must avoid passing through the areas listed above.

Area No. 20 (East of Ostrov Sakhalin).—Area bounded by lines joining the following positions:

a. 48˚42.0'N, 145˚09.0'E.
b. 48˚55.0'N, 144˚42.0'E.
c. 49˚35.0'N, 144˚22.0'E.
d. 50˚32.0'N, 144˚00.0'E.
e. 50˚32.0'N, 144˚35.0'E.
f. 50˚00.0'N, 144˚47.0'E.
g. 49˚00.0'N, 145˚27.0'E.
h. 48˚42.0'N, 145˚27.0'E.

Area No. 19 (East of Ostrov Sakhalin).—Area bounded by a circle with a radius of 0.5 mile centered on position 52˚31.0'N, 143˚40.0'E.

Area No. 17 (East of Ostrov Sakhalin).—Area bounded by lines joining the following positions:

a. 52˚58.0'N, 144˚07.0'E.
b. 53˚15.0'N, 144˚07.0'E.
c. 53˚15.0'N, 144˚44.0'E.
d. 52˚58.0'N, 144˚44.0'E.

Zaliv Shelikhova

Area No. 25 (Penzhinskaya Guba).—Area bounded by the coastline and lines joining the following positions:

a. 59˚39.0'N, 160˚27.0'E.
b. 59˚56.0'N, 161˚14.0'E.
c. 60˚24.0'N, 161˚40.0'E.
d. 61˚24.0'N, 163˚39.0'E.

Area No. 29 (Penzhinskaya Guba).—Area between Mys Opasnyy and Mys Mamet from the coastline to the 10m curve.

Western Shore of Poluostrov Kamchatka

Area No. 24.—Area bounded by lines joining the following positions:

a. 51˚50.0'N, 155˚52.0'E.

b. 52˚24.0'N, 155˚16.0'E.
c. 54˚24.0'N, 154˚40.0'E.
d. 56˚33.0'N, 154˚40.0'E.
e. 57˚11.0'N, 155˚12.0'E.
f. 57˚11.0'N, 156˚19.0'E.
g. 56˚46.0'N, 155˚48.0'E.
h. 55˚25.0'N, 155˚21.0'E.
i. 54˚57.0'N, 155˚29.0'E.
j. 53˚42.0'N, 155˚47.0'E.
k. 53˚29.0'N, 155˚42.0'E.

Areas Temporarily Dangerous for Navigation

South of Zaliv Petra Velikogo

Area No. 55.—Area bounded by lines joining the following positions:
a. 41˚40.0'N, 131˚41.0'E.
b. 42˚15.0'N, 131˚41.0'E.
c. 42˚25.8'N, 131˚50.0'E.
d. 41˚40.0'N, 131˚50.0'E.

Area No. 55A.—Area bounded by lines joining the following positions:
a. 41˚40.0'N, 131˚41.0'E.
b. 42˚15.0'N, 131˚41.0'E.
c. 42˚20.3'N, 132˚15.5E.
d. 41˚40.0'N, 133˚15.5'E.

Area No. 55B.—Area bounded by lines joining the following positions:
a. 41˚40.0'N, 132˚24.0'E.
b. 42˚21.5'N, 132˚24.0'E.
c. 42˚25.8'N, 132˚50.0'E.
d. 41˚40.0'N, 132˚50.0'E.

Areas to be Avoided

Zaliv Petra Vilekogo

Area No. 333 (Amurskiy Zaliv-Bukhta Novik).—Area bounded by lines joining the following positions:
a. 43˚01.90'N, 131˚51.43'E.
b. 43˚01.90'N, 131˚51.48'E.
c. 43˚01.84'N, 131˚51.45'E.

Area No. 355 (Amurskiy Zaliv-Bukhta Paris).—Area bounded by lines joining the following positions:
a. 43˚01.53'N, 131˚54.69'E.
b. 43˚01.56'N, 131˚54.83'E.
c. 43˚01.41'N, 131˚54.89'E.
d. 43˚01.35'N, 131˚54.70'E.

Area No. 332 (Zaliv Strelok-Bukhta Razboynik).—Area bounded by lines joining the following positions:
a. 42˚53.52'N, 132˚22.59'E.
b. 42˚54.15'N, 132˚22.74'E.
c. 42˚54.14'N, 132˚23.32'E.
d. 42˚53.51'N, 132˚23.17'E.

Area No. 320 (Zaliv Strelok-Bukhta Bezymyannaya).—Area bounded by lines joining the following positions:
a. 42˚55.65'N, 132˚25.92'E.
b. 42˚55.64'N, 132˚26.10'E.
c. 42˚55.12'N, 132˚26.75'E.
d. 42˚54.87'N, 132˚26.76'E.
e. 42˚54.95'N, 132˚26.22'E.
f. 42˚55.09'N, 132˚25.77'E.

Zaliv Petra Vilekogo to Mys Belkina

Area No. 228 (Zaliv Ol'gi).—Area bounded by the coastline and lines joining the following positions:
a. 43˚41.20'N, 135˚16.72'E.
b. 43˚40.81'N, 135˚16.82'E.
c. 43˚40.87'N, 135˚16.64'E.
d. 43˚41.17'N, 135˚16.60'E.

Search and Rescue

The Maritime Rescue Coordination Center (MRCC) Moskva is responsible for coordinating search and rescue operations and working with search and rescue services of neighboring countries.

A network of coast radio stations maintains a continuous listening watch on international distress frequencies for distress traffic.

The MRCCs and the Maritime Rescue Coordination Subcenters (MRSC) can be contacted by e-mail, as follows:

MRCC Moskva:	smrcc@morflot.ru
MRSC Petropavlovsk-Kamchatskiy:	mouchan@mappk.kamchatka.ru
MRCC Vladivostok:	vldvmrcc@vld.pma.ru
MRSC Yuzhno-Sakhalinsk:	mspc@sakhalin.ru

Signals

Dredge Signals

Dredges in Russian waters show the appropriate lights or shapes as prescribed in the *International Regulations for Preventing Collisions at Sea*. These signals should only be interpreted as an indication of the side on which the dredge wishes to allow the approaching vessel to pass.

The approaching vessel should reduce speed to the minimum necessary for steerage way before arriving at a distance of 0.5 mile from the dredge; one prolonged blast should be sounded. The dredge will, in addition to showing the proper signals, confirm the side on which the dredged is to be passed, as follows:

Russia—Dredge Signals

Signal	Meaning
One long blast	Leave me on your port side.
Two long blasts	Leave me on your starboard side.
Three long blasts	No passage. Wait until clear.

Survey Vessels

Russian vessels, engaged in survey operations, display a blue pennant having a white disc bearing the figure of a lighthouse.

Fishing Vessels

Mariners are cautioned that, in certain waters of the Baltic Sea and the Gulf of Finland, Russian fishing vessels may be encountered at night, showing lights additional to those described in the International Rules of the Road.

These lights are white, red, green, and blue. The brightest is a red light with a visibility of at least 1 mile; the remaining lights have a visibility of not less than 750m.

Mariners are advised on sighting these fishing vessels, to give them a berth of not less than 2 miles.

Lightships Not on Station

A lightship, not on station, that has broken loose from its anchor shall discontinue its charactaristic light and fog signal and, if possible, lower its daymark and hoist the following signals:

1. By day—Two large black balls, one in the bow, the other in the stern.
2. At night—Two red lights, one in the bow, the other in the stern.

Red flags shall be displayed in place of the black balls if circumstances are such that the above daytime signals cannot be used, or if the signals are the distinguishing signals for that particular lightship.

The lightship that has broken loose from its anchor shall, in addition to the above, take the following precautions:

1. By day, hoist the signal "LO" of the International Code of Signals, meaning "I am not in my charted position."
2. By night, burn red and white pyrotechnic lights simultaneously at least once every 15 minutes.

If circumstances are such that pyrotechnics cannot be used, the red and white pyrotechnics shall be replaced by simultaneously showing a red and a white light.

Special Warning Signals

It may at times be necessary to prohibit entry of shipping into certain Russian territorial waters and under these conditions a special warning service consisting of special warships, guardships, examination vessels, or coast guard stations will be established. Mariners are cautioned on approaching such waters to maintain a good lookout for these vessels which will show the following signals:

1. By day—A blue triangular flag.
2. By night—Three blue lights, vertically disposed.

Should any vessel approach an area where entry to or navigation within is prohibited, the patrol vessel, guardship, or coastguard station shall in addition to the above signals, show the following signals:

1. By day—Three red balls, vertically disposed.
2. By night—Three red lights, vertically disposed.

The above information is not to be construed to mean every restricted area will be guarded, and vessels proceeding into these waters should have on board the latest available information pertaining to navigation off the coastal areas of Russian.

Vessels of the Russian Police Department wishing to stop non-naval vessels will exhibit:

1. By day—International Code flag L from the mast.
2. By night—Two green lights, vertically disposed.

Ships that have been given either of these signals must stop and remain stopped until permission to proceed is received from the guardship.

Should entry or navigation into a given area be unrestricted and no special signal or instruction regarding further movements have been made or given by the guardship or coastguard station, an incoming vessel is free to proceed to its destination, but must observe such regulations as may already have been promulgated.

Should Russian naval vessels be present in any restricted area, and should no special regulations concerning navigation with it have been issued, then approaching vessels must not pass between such naval vessels.

Submarine Warning Signals

The following signal is used to warn foreign submarines which are submerged:

1. A series of three explosions at 1 minute intervals, followed after an interval of 3 minutes by a second series of three explosions; you have entered territorial waters. Come to the surface immediately. If you do not surface you will be fired upon.
2. An acoustic signal by sonar may be given simultaneously, with the same meaning as above. The signal will consist of five dashes, each dash 3 seconds long, with the interval between dashes being 3 seconds.

Tidal Signals

Signals are displayed to indicate the height of the water level above chart datum, in units of 20 cm, as follows:

Day Signal	Night Signal	Meaning
Black cone, point down	White light over green light	Falling water level
Black cone, point up	Green light over white light	Rising water level
Black cone, point down	Green light	Height of water level—1 unit
Black cylinder	Red light	Height of water level—5 units
Black ball	White light	Height of water level—25 units
White cylinder	Red light	Height of water level—0.5 unit

Traffic Signals

Signals regulating entry to and departure from the Russian Federation ports are, as follows:

Day Signal	Night Signal	Meaning
Three black balls, vertically disposed	Three red lights, vertically disposed	Entry forbidden due to obstruction
Black cone, point up, between two black balls, vertically disposed	White light between two red lights, vertically disposed	Entry temporarily prohibited-Normal operations
Black cone, point down, above black cone, point up, over black ball	Green light above white light over red light	Entry and exit temporarily prohibited-Normal operations

Day Signal	Night Signal	Meaning
Black cone, point down, above black cone, point up, over black cone, point down	White light between two green lights, vertically disposed	Exit temporarily prohibited-Normal operations
Black ball between two black cylinders, vertically disposed	Red light between two white lights, vertically disposed	Movement of small warships, launches, boats prohibited in harbor and roads

Note.—All signals are disposed vertically; all the day signal shapes are black.

Towing Signals

The following sound signals are used by the vessel being towed:

Signal	Meaning
One long blast	Tow straight ahead or astern (as appropriate)
Two long blasts	Stop engines
One long blast, one short blast	Reduce speed
One short blast, one long blast	Increase speed
One long blast, one short blast, one long blast	Let go or take up tow
One short blast	Tow to starboard
Two short blasts	Tow to port
Three short blasts	Go full speed astern
Three long blasts, one short blast	Tug required
Five or more short blasts	Stop moving immediately

When two tugs are employed, one will be directed by the ship's whistle and the other by oral whistle signals. Signals given by the towed ship must be repeated by the tug.

Submarine Operating Areas

Warships of the Navy of Russia escorting submarines will, for purposes of warning vessels of the presence of submarines in a particular sea area, hoist the flag signal "NE 2" of the International Code of Signals, meaning "You should proceed with particular caution because submarine exercises are in progress in this area."

Warships of Russia shall, if possible, also transmit the fact by radio in plain language on the established international frequency, 500 kHz.

During darkness, specially assigned warships shall warn approaching vessels of the presence of submarines by using for the purpose, all communication means available to them.

Approaching vessels shall set their courses so as not to interfere with the movements of the warships displaying the signals indicated, and shall ensure that warships have adequate room in which to maneuver.

If, for whatever reason, a vessel is unable to meet these requirements, such vessel should reduce speed to as slow as possible until such time as the danger area has been transmitted to it, or until such time as instructions as to a safe course are received.

The vessel shall, at the same time, keep a sharp lookout for submarines, the presence of which can be detected only if they are at a depth where the periscope, snorkel, parabolic radar antenna, or DF loop is visible.

All these devices can be mistaken for the brooms used as topmarks, logs, and other floating objects, because of their external appearance. However, if they are in fact extendible devices of a submarine they usually will leave a wake.

A submarine, moreover, sometimes can be detected because of air bubbles coming to the surface, or because of a red and white float or buoy, towed astern and visible on the surface.

A surfaced submarine can be detected at night by its running lights, and by the fixed white lights of emergency signal buoys which can be lighted by the submarine, in good time, while it still is submerged. In some cases the presence of a submarine in the area can be made known by its submerged firing of signal cartridges which form a colored smoke in the daytime, and by a similarly colored flare at night.

A vessel observing the extendible devices of a submarine, a towed float or buoy, the fact of running lights showing as well as the fixed white lights of emergency signal buoys, or the firing of signal cartridges shall sheer off immediately so as to leave them astern, or back down or stop its engine, so as to pass clear of the submarine at a safe distance.

Mariners should, however, be aware of the fact that surface warships do not always escort submarines engaged in exercises or making passage.

Sunken Submarines

When a Russian submarine is in distress and cannot surface it can indicate its position by releasing, to the surface, an emergency signal buoy, fuel or lubricating oil, or air bubbles.

Submarines of the Navy of Russia are fitted with two emergency signal buoys; one in the bow, the other in the stern.

The emergency signal buoys are shaped like a truncated cone with a flat bottom and a spherical upper part (the buoy can, in some cases, is shaped like an oblate spheroid). Buoy diameter is about 0.9 to 1.25m; height about 0.4 to 0.7m.

The body of the buoy rises about 0.4 to 0.6m above the surface. The buoy is red, with the upper part having three red sectors alternating with three white sectors. One of the white sectors carries a black H or a black K.

The letter H signifies that the buoy is the bow buoy, the letter K that the buoy is the stern buoy. The buoys are visible for about 2 miles.

A quick flashing white light (70 flashes per minute) visible for 5 miles, is shown from the center of the upper part of the buoy.

A mariner sighting evidence on the surface that a submarine is in distress shall, with the maximum accuracy, fix the position of an oil slick or of the appearance of air bubbles, and report this to the nearest Russian port authorities.

If an emergency signal buoy is spotted, the fact shall be reported immediately to the nearest Russian port, such report shall include the exact position of the buoy and time spotted, and communications shall be established with the submarine over the emergency signal buoy telephone.

To establish communications with the submarine, open the cover on the well in the buoy (by removing the wing nuts, or by backing off the nuts with a wrench), secure it, remove the handset from the rubber case, and call by pressing the button on the end of the rubber bulb.

Upon receiving a response, release the button and begin to talk. Now further action on the part of the mariner will depend entirely on the situation in which the submarine may be in and on the status of its crew.

Vessels, cutters, or boats should not tie up to an emergency signal buoy, nor lift it on board.

Russian Submarine Lights

The design features of submarines prevent them from fully complying with the provisions of Rules of the Road with respect to ships' lights.

The low position of the running lights, the small vertical spacing, and the closeness together of the masthead and side lights all work to give an incorrect idea of the length of the submarine, its exact course, and even more to the point, of changes in course. This is why submarine lights can be mistaken for those of a small vessel, or a cutter, moving at slow speed.

Mariners should always be aware of the special features of the placement of submarine lights, and take all precautionary measures necessary when passing submarines, particularly in fairways, in narrow waters, and in the entrances (exits) of bays and gulfs.

Submarines may carry one or two special identification lights for timely recognition when in restricted waters, and in areas in which traffic is heavy.

These are quick flashing (100 flashes per minute) orange lights visible all around the horizon, located in the submarines fore and aft plane.

One light is installed on top and in the middle of the conning tower, at least 1.5m above the masthead light. The other is on the stern of the submarine, or on a stabilizer.

All ships, upon seeing these lights, shall take immediate, decisive measures to pass the submarine at a safe distance.

Time Zone

The boundaries between the Time Zones covering the E coast of Russia are irregular; the principal towns in each zone are listed in the accompanying table. Daylight Savings Time is observed from the last Sunday in March until the Saturday before the last Sunday in October.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) off the E coast of Russia are, as follows:

1. Approaches to Vladivostok. (Government of Russia)
2. Approaches to Zaliv Nakhodka. (IMO approved)
3. Off Mys Ostrovny. (IMO approved)
4. La Perouse Strait. (Government of Russia)
5. Proliv Yekateriny. (Government of Russia)
6. Proliv Shpanberga. (Government of Russia)
7. Off Mys Aniva. (IMO approved)
8. Approaches to Sovetskaya Gavan and Bukhta Vanino. (Government of Russia)
9. Proliv Friza. (Government of Russia)
10. Proliv Urup. (Government of Russia)
11. South of Ostrov Broutona. (Government of Russia)
12. Proliv Bussol. (IMO approved)
13. Chetvertyy Kurilskiy Proliv. (IMO approved)
14. Mys Povorotnyy to Mys Opasnyy. (Government of Russia)
15. Approaches to Avachinskay Guba. (Government of Russia)

U.S. Embassy

The U.S. Embassy is situated at Bolshoy Devyatinskiy Pereulok No. 8, 121099 Moscow.

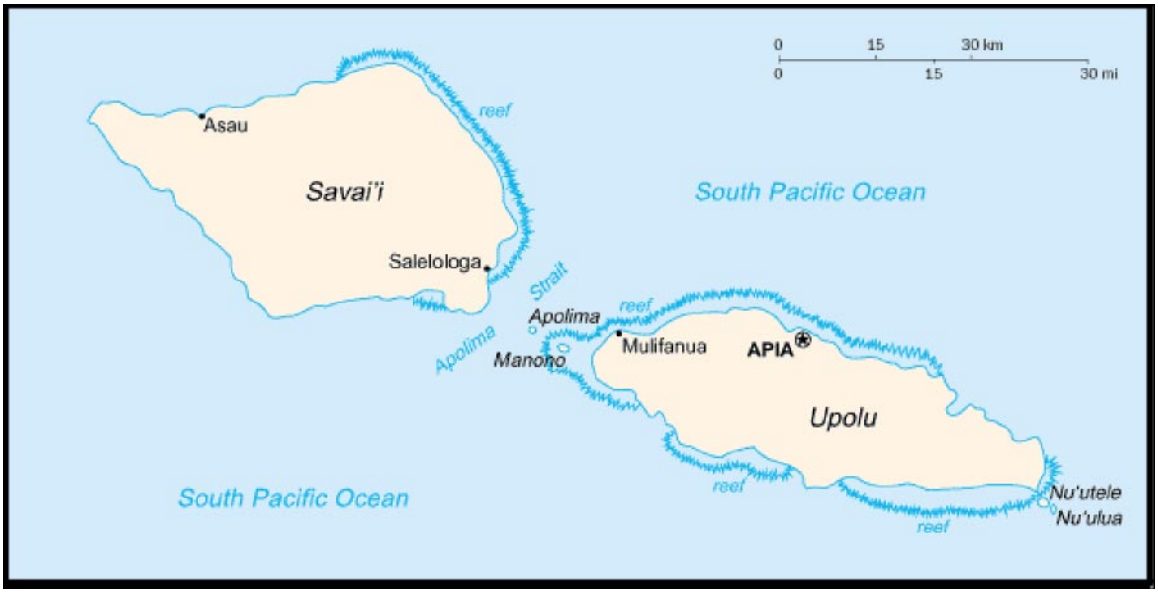
The mailing address is APO AE 09721.

U. S. Embassy Russia Home Page
http://moscow.usembassy.gov

East Coast of Russia—Time Zones

Zone	City	Standard Time	Daylight Savings Time
8	Vladivostok, Khabarovsk, Okhotsk	KILO (-10)	LIMA (-11)
9	Magadan, Yuzhno	LIMA (-11)	MIKE (-12)
10	Petropavlovsk, Pevek	MIKE (-12)	XRAY (-13)

SAMOA



General

Samoa (formerly known as Western Samoa), an independent state, located in the South Pacific Ocean, and a member of the British Commonwealth, consists of two large islands and several small ones lying W of 171˚W.

Samoa consists of the inhabited islands of Upolu, Savai'i, Manono, and Apolima and the uninhabited islands of Fanuatapu, Namua, Nuutele, Nuulua, and Nuusafee. The islands have numerous volcanic peaks

Upolu extends about 45 miles from E to W and up to 15 miles from N to S. A chain of volcanic peaks stretches the length of the island with hills and coastal plains on either side. Mount Fito is 1,100m high.

Savai'i is also about 45 miles across but is 22 miles wide. It a central core of volcanic peaks which are surrounded by a lava-based plateau, lower hills, and coastal plains. Mount Mata'aga, is 1,850m high

The other seven islands of Samoa are quite small.

The climate is tropical marine, moderated by SE trade winds. The prevailing winds are from between ESE and NNE. They are fairly constant from May to November but are fitful, with periods of calm, from November to April.

The annual rainfall averages over 3,000mm. The rainy season is from November to April, with January being the rainiest month; the dry season runs from May to October.

There is little temperature variation; December is the warmest month and July is the coldest, but the average temperature difference is only about 1-2˚C.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

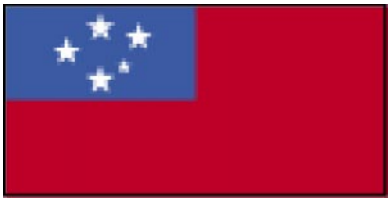
Hurricanes are liable to occur from January to March and occasionally up to the middle of April.

Currency

The official unit of currency is the tala, consisting of 100 sene.

Government

Samoa is an independent state and a member of the British Commonwealth with a constitutional monarchy under a native chief. The country is divided into 11 districts.



Flag of Samoa

Samoa is governed by a Chief. The present Chief has a lifetime tenure of office but succeeding ones will be elected for a term of five years. The unicameral Legislative Assembly consists of 49 directly-elected members serving 5-year terms.

The legal system is based on English common law and local customs.

The capital is Apia.

Holidays

The following holidays are observed:

January 1-2	New Year's Days
Good Friday	Variable
Easter Monday	Variable
April 17	Flag Day
April 25	ANZAC Day
May 1	Day of the People
May 14	Samoan Mother's Day
June 1-2	Independence Days
August 6	Labor Day
October 15	Lotu-a-Tamait
November 2	Arbor Day
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on timber, tourism, food processing, and fishing.

Languages

Samoan and English are the official languages.

Navigational Information

Enroute Volume
Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims
The maritime territorial claims of Samoa are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.

Search and Rescue

Apia Coast Radio Station (5WA) maintains a continuous listening watch on 500 kHz and 2182 kHz.

Signals

Hurricane warning signals are, as follows:
1. Yellow pennant—Preliminary hurricane warning.
2. Black pennant—Final hurricane warning.

Time Zone

The Time Zone description is XRAY (+11). Daylight Savings Time is not observed.

U.S. Embassy

The ambassador to New Zealand is accredited to Samoa. The Embassy is situated in Apia.
The mailing address is P. O. Box 3430, Apia.

SOLOMON ISLANDS

General

The Solomon Islands, an independent nation within the British Commonwealth, consists of a double chain of six large islands and many smaller ones. The islands are located in the South Pacific Ocean, E of Papua New Guinea, between 5˚S and 12˚S, and 155˚E and 170˚E.

The major islands are Guadalcanal, Malaita, San Cristobal, New Georgia, Santa Isabel, and Choiseul. The chain, excluding Buka and Bougainville, which are part of Papua New Guinea, also includes the Antong Java Atolls N of the group, the Santa Cruz Islands to the E, and the raised atolls of Rennell and Bellona to the S. Guadalcanal, the largest of the Solomon Islands, is about 93 miles long by 30 miles wide.

The climate is tropical monsoon with few extremes of temperature and weather.

The terrain is mostly rugged mountains with some low coral atolls.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Solomon Islands dollar, consisting of 100 cents.

Government

Flag of the Solomon Islands

The Solomon Islands is a parliamentary democracy. The country is divided into nine districts and one capital territory.

The Solomon Islands is governed by a Prime Minister selected from the majority party of the National Parliament. The unicameral National Parliament is composed of 50 directly-elected members serving 4-year terms.

The legal system is based on English common law.

The capital is Honiara.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Holy Saturday	Variable
Easter	Variable
Easter Monday	Variable
May 1	Labor Day
Second Saturday in June	Queen's Birthday
July 7	Independence Day
August 10	End of the Pacific War
November 15	Prince Charles Day
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on palm oil milling, rice milling, fish canning, fish freezing, saw milling, food, tobacco, and soft drinks.

Languages

English is the official language. There are over 60 native dialects spoken.

Mined Areas

Within Buka Passage, the area bounded by the parallel of 5˚20'S, and by the meridians of 154˚35'E and 154˚48'E, is open to surface navigation only. Anchoring, trawling, and bottoming by submarines is dangerous due to sunken mines.

Within Bougainville Strait and its approaches, mines exist in the sea area N of a line joining the following positions:

1. Moila Point (6˚52.5'S, 155˚42.5'E.).
2. East Point (6˚47.8'S, 155˚54.7'E.).

The following swept channel and area are considered safe for surface navigation.

1. The 0.5-mile wide swept channel to Tonolei Harbor, with its centerline beginning bearing 035˚ distant 1 mile from the center of Aiaisina Island (6˚51'45"S., 155˚49'50"E.) and continuing in a 035˚ direction for 5.5 miles. Anchoring, trawling, and bottoming by submarines is dangerous along the channel, but there are no restrictions in area 2 below.
2. All that portion of Tonolei Harbor which lies to the N of the swept channel is free from danger due to mines.

Within Shortland Island, the area enclosed by the shore and lines joining the following positions is dangerous:

a. 7˚02.9'S, 155˚51.2'E.
b. 7˚02.8'S, 155˚52.3'E.
c. 7˚05.4'S, 155˚53.6'E.
d. 7˚06.4'S, 155˚52.9'E.
e. 7˚04.9'S, 155˚51.4'E.

Within Malaita Island, the following area is considered safe for surface navigation, but vessels should not anchor, nor submarines bottom, within the line joining the following positions:

1. A point bearing 310˚ distant 2.63 miles from Hauharii Rock (Sail Rock) (9˚18.4'S., 161˚20.0'E.).
2. A point bearing 139˚ distant 3.95 miles from point 1.
3. A point bearing 228˚ distant 0.8 mile from point 2.
4. A point bearing 319˚ distant 3.75 miles from point 3.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of the Solomon Islands are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles.

* Claims archipelagic status.

Pilotage

Pilotage is compulsory for ships of over 200 grt at Honiara. At other harbors, pilotage is not compulsory, but pilots may be obtained through the Solomon Islands Port Authority or local shipping agents.

Search and Rescue

The Marine Division of the Ministry of Transport is responsible for coordinating search and rescue operations. Honiara Coast Radio Station (H4H) maintains a continuous listening watch on 2182 kHz for distress traffic.

Vessel Reporting Service

A vessel reporting service, designed to assist in search and rescue operations in the waters of the Solomon Islands, operates from the Honiara SAR Center. Position reports should be sent daily, through Honiara (H4H) on 6215.5 kHz, at the following times:

a. 1503 UT (GMT).
b. 0403, 2133, or 2233 UT (GMT).

Time Zone

The Time Zone description is LIMA (-11). Daylight Savings Time is not observed.

U.S. Embassy

The ambassador to Papua New Guinea is accredited to the Solomon Islands.

The mailing address is P.O. Box 1492, Port Moresby, Papua New Guinea.

U. S. Embassy Papua New Guinea Home Page
http://portmoresby.usembassy.gov

SOUTH KOREA

General

South Korea, a mountainous peninsula about 600 miles long and 135 miles wide, is located in E Asia and projects SE from China. It is in the S half of the Korean Peninsula, bordering the Sea of Japan and the Yellow Sea, S of North Korea.

In 1945, the United States and Russian forces enforced the surrender of the Japanese troops in Korea, dividing the country for mutual military convenience into two portions separated by the 38th parallel of latitude.

The country remained thus divided until the outbreak of the Korean war in June, 1950. A cease-fire was accepted on July 10, 1951, and an agreement was signed between the North Koreans and the South Koreans on July 27, 1953; since then the country has remained under two separate governments.

The climate is temperate, with rainfall heavier in summer than winter.

The terrain is mostly hills and mountains with wide coastal plains in the W and S.

The N and E sections of Korea are mostly rugged and mountainous, with the good harbors only found on the W and S shores.

Buoyage System

The IALA Buoyage System (Region B) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Set net fisheries and aquaculture farms are located within 2 miles offshore in numerous places along the coasts of Korea.

In some places they extend as far as 5 miles offshore. Newly set fishing nets and aquaculture farms which are considered to be dangerous to navigation are reported in Korean Notices to Mariners.

It was reported that the local fishing boats do not display the proper International Lights. All boats usually have at least one white deck light.

Offshore exploration and drilling operations take place off the coasts of Korea. A gas production platform (35˚09'N., 129˚11'E.) is situated E of Ulsan Hang.

Currency

The official unit of currency is the South Korean won, consisting of 100 chun.

Firing Areas

Firing and bombing exercise areas used by South Korean authorities along the coast of South Korea are given in Appendix I.

Government

Flag of South Korea

South Korea is a republic. The country is divided into nine provinces and seven metropolitan cities.

South Korea is governed by a directly-elected President serving a 5-year term. The Prime Minister is appointed by the President. The unicameral National Assembly consists of 299 directly-elected members serving 4-year terms.

The legal system is based on European civil law systems, Anglo-American law, and Chinese classical thought.

The capital is Seoul.

Holidays

The following holidays are observed:

January 1	New Year's Day
Seol-Nal	Variable (3 days)
March 1	Sam Il Jul (Independence Movement Day)
April 5	Shik Mok Il (Arbor Day)
May 1	Labor Day
May 5	Orininal (Children's Day)
Buddha's Birthday	Variable
June 6	Hyun Choong Il (Memorial Day)
July 17	Je Hun Jul (Constitution Day)
August 15	Kwang Bok Jul (Independence Day)
Chusok (Harvest Moon Festival)	Variable (3 days)
October 3	Foundation Day
December 25	Christmas Day

Industries

The main industries are based on electronics, automobile production, chemicals, shipbuilding, steel, textiles, clothing, footwear, and food processing.

Languages

Korean is the official language.

Mined Areas

Extensive mine laying took place in Korean waters during the Korean War, 1950 to 1953. The areas, some formerly published in CHINPACS, are dangerous due to mines. The positions of the areas, channels, and anchorages that have been swept are also listed.

Due to the elapse of time the risk in these areas to surface navigation is now considered no more dangerous than the ordinary risks of navigation. A real risk still exists with regard to anchoring, fishing, or any form of submarine or seabed activity. Mariners should not enter unswept areas without obtaining routing instructions from Korean Naval authorities.

EAST COAST

Yeong Do (Yong Do) to Ul Gi (Ulgi) (Korean Area 4-5)— A swept area bounded by lines joining the following positions:

a. 34˚59'30"N, 129˚09'09"E.
b. 35˚24'30"N, 129˚30'50"E.
c. 35˚25'15"N, 129˚29'15"E.
d. 35˚26'30"N, 129˚30'30"E.
e. 35˚30'00"N, 129˚31'24"E.
f. 35˚30'00"N, 129˚27'50"E.
g. 35˚27'30"N, 129˚27'00"E.
h. 35˚27'30"N, 129˚23'23"E.
i. 35˚21'00"N, 129˚22'00"E.
j. 35˚17'45"N, 129˚16'45"E.
k. 35˚10'30"N, 129˚14'15"E.
l. 35˚05'00"N, 129˚08'22"E.
m. 35˚04'30"N, 129˚09'00"E.
n. 35˚03'22"N, 129˚07'50"E.
o. 35˚02'45"N, 129˚08'52"E.

Caution.—The area bounded by lines joining the following positions has not been swept:

a. 35˚25'45"N, 129˚28'15"E.
b. 35˚27'00"N, 129˚29'20"E.
c. 35˚30'00"N, 129˚30'10"E.
d. 35˚27'50"N, 129˚29'10"E.
e. 35˚26'00"N, 129˚27'45"E.

Ulsan Man (Korean Area 4—5).—Swept channels, 0.5 mile wide, with their centerlines joining the following positions:

1a. 35˚24'00"N, 129˚28'30"E.
1b. 35˚27'46"N, 129˚23'48"E.
1c. 35˚29'20"N, 129˚23'58"E.

2a. 35˚26'30"N, 129˚24'45"E.
2b. 35˚28'35"N, 129˚24'00"E.

Ulsan Hang Inner Port, N of the N end of the swept channels above, and Jangsaengpo Hang (Changsaengp'o Hang) are clear of mines.

For the anchorage area in the approaches to Ulsan Man, see Yeong Do (Yong Do) to Ul Gi (Ulgi) above.

Ul Gi (Ulgi) to Suwon Dan (Korean Area 4-3)

1. The coastal area between the parallels of 35˚30'00"N and 38˚37'00"N, has been swept from about the 20 to 200m curves and is considered safe for surface navigation only.

2. In Yongil Man (Yeongil Man), a swept area inside the 10m curve is bounded by lines joining the following positions:

a. 36˚01'43"N, 129˚28'02"E.
b. 36˚00'22"N, 129˚27'07"E.
c. 35˚59'39"N, 129˚27'08"E., then along about the 5m curve to
d. 36˚03'46"N, 129˚24'10"E.
e. 36˚03'07"N, 129˚25'36"E.

This area is open to surface navigation only.

Guryongpo (Kuryongp'o) Approaches (Korean Area 4-39).—A swept channel, 0.5 mile wide, with its centerline joining the following positions:

a. 35˚57'52"N, 129˚40'30"E.
b. 35˚57'30"N, 129˚35'50"E.
c. 35˚58'30"N, 129˚34'00"E.

Pohang Approaches (Korean Area 4-38)

1. A swept channel, 0.5 mile wide, with its centerline joining the following positions:

a. 36˚08'15"N, 129˚42'05"E.
b. 36˚07'15"N, 129˚32'47"E.
c. 36˚01'24"N, 129˚26'09"E.

2. A swept channel, 0.25 mile wide, with its centerline joining the following positions:

a. 35˚50'30"N, 129˚33'00E.
b. 36˚03'00"N, 129˚38'00E.
c. 36˚06'30"N, 129˚36'00E.
d. 36˚06'30"N, 129˚30'00E.
e. 36˚02'19"N, 129˚26'50E.

Mukho (Mugho) Approaches (Korean Area 4-37)

1. A swept area bounded by lines joining the following positions:

a. 37˚39'37"N, 129˚04'40"E.
b. 37˚39'37"N, 129˚11'00"E.
c. 37˚29'55"N, 129˚17'20"E.
d. 37˚29'55"N, 129˚10'45"E.

2. Swept channels, 0.5 mile wide, with their centerlines joining the following positions:

1a. 37˚19'30"N, 129˚19'45"E.
1b. 37˚35'00"N, 129˚09'15"E.

2a. 37˚31'01"N, 129˚10'30"E.
2b. 37˚31'55"N, 129˚07'55"E.

Chumunjin Approaches (Korean Area 4-36).—A swept channel, 1 mile wide, with its centerline joining the following positions:

a. 37˚31'01"N, 129˚10'30"E.
b. 37˚37'06"N, 129˚07'50"E.
c. 37˚41'08"N, 129˚04'10"E.
d. 37˚47'00"N, 128˚58'45"E.
e. 37˚56'03"N, 128˚50'04"E.

Sokch'o Han (Korean Area 4-35).—A swept area bounded by lines joining the following positions:

a. 38˚25'00"N, 128˚40'50"E.
b. 38˚13'00"N, 128˚40'25"E.
c. 37˚51'05"N, 128˚59'50"E.
d. 37˚51'05"N, 128˚56'15"E.
e. 38˚11'50"N, 128˚38'03"E.
f. 38˚25'00"N, 128˚30'25"E.

A swept channel, 1 mile wide, with its centerline joining the following positions:

a. 38˚07'45"N, 128˚39'06"E.
b. 38˚11'54"N, 128˚38'30"E.
c. 38˚19'01"N, 128˚33'25"E.

Geojin Hang (Korean Area 4-34).—A swept area bounded by lines joining the following positions:

a. 38˚34'40"N, 128˚24'13"E.
b. 38˚34'40"N, 128˚29'30"E.
c. 38˚25'00"N, 128˚35'10"E.
d. 38˚25'00"N, 128˚29'45"E.

SOUTH COAST

Soan Gundo.—The area bounded by lines joining the following positions is dangerous:

a. The coast in 35˚10'00"N.
b. 35˚10'00"N, 125˚50'00"E.
c. 34˚15'00"N, 125˚50'00"E.
d. 34˚15'00"N, 126˚30'00"E.
e. 34˚05'00"N, 126˚30'00"E.
f. 34˚05'00"N, 127˚00'00"E.
g. 34˚20'00"N, 127˚00'00"E.
h. The coast in 34˚20'00"N.

Yosu Haeman Approaches.—An area between 34˚10'N and 34˚52'N, and between 127˚40'E and 128˚30'E is dangerous.

West of Soan Gundo to Komun Do (Korean Area 4-13).—Swept areas bounded by lines joining the following positions:

1a. 34˚08'00"N, 127˚21'30"E.
1b. 34˚03'12"N, 126˚31'45"E.
1c. 34˚10'35"N, 125˚58'45"E.
1d. 34˚15'45"N, 125˚52'45"E.
1e. 34˚14'18"N, 125˚51'15"E.
1f. 34˚09'15"N, 125˚57'30"E.
1g. 34˚01'18"N, 126˚31'00"E.

1h. 34˚06'00"N, 127˚21'30"E.

2a. 34˚08'00"N, 127˚21'30"E.
2b. 34˚06'10"N, 126˚50'30"E.
2c. 34˚03'12"N, 126˚31'45"E.

3a. 34˚03'45"N, 126˚20'30"E.
3b. 34˚04'40"N, 126˚06'54"E.
3c. 34˚09'45"N, 125˚44'50"E.
3d. 34˚09'06"N, 125˚44'30"E.
3e. 34˚03'55"N, 126˚06'48"E.
3f. 34˚02'45"N, 126˚24'54"E.

4a. 34˚03'12"N, 126˚31'45"E.
4b. 34˚17'30"N, 126˚12'45"E.
4c. 34˚16'10"N, 126˚10'48"E.
4d. 34˚04'15"N, 126˚27'00"E.

5a. 34˚09'30"N, 126˚23'20"E.
5b. 34˚16'15"N, 126˚14'30"E.
5c. 34˚16'22"N, 126˚14'45"E.
5d. 34˚07'00"N, 126˚28'45"E.
5e. 34˚06'15"N, 126˚28'06"E.

Komun Do to Gadeog Sudo (Kadok Sudo) (Korean Area 4-11).—Swept areas bounded by lines joining the following positions:

1a. 34˚58'50"N, 128˚46'58"E.
1b. 34˚58'09"N, 128˚46'49"E.
1c. 34˚58'00"N, 128˚46'09"E.
1d. 34˚56'56"N, 128˚46'33"E.
1e. 34˚50'00"N, 128˚45'04"E.
1f. 34˚50'00"N, 128˚45'52"E.
1g. 34˚47'06"N, 128˚45'15"E.
1h. 34˚45'00"N, 128˚43'24"E.
1i. 34˚29'30"N, 128˚29'08"E.
1j. 34˚08'00"N, 127˚21'30"E.
1k. 34˚06'00"N, 127˚21'30"E.
1l. 34˚26'00"N, 128˚25'00"E.
1m. 34˚26'45"N, 128˚30'00"E.
1n. 34˚47'00"N, 128˚48'08"E.
1o. 34˚48'36"N, 128˚48'15"E.
1p. 34˚58'45"N, 128˚50'45"E.

2a. 34˚20'30"N, 127˚48'25"E.
2b. 34˚23'30"N, 127˚48'30"E.
2c. 34˚23'30"N, 127˚37'42"E.
2d. 34˚19'30"N, 127˚37'42"E.
2e. 34˚19'30"N, 127˚46'25"E.

3a. 34˚25'30"N, 128˚18'30"E.
3b. 34˚22'00"N, 127˚54'35"E.
3c. 34˚07'33"N, 127˚21'22"E.

A swept channel, 0.5 mile wide, with its centerline joining the following positions:

4a. 34˚30'50"N, 128˚30'45"E.
4b. 34˚31'30"N, 128˚08'30"E.

Yosu Haeman and Approaches (Korean Area 4-12).—A swept channel, 0.5 mile wide, with its centerline joining the following positions:

a. 34˚25'00"N, 128˚03'00"E.
b. 34˚35'00"N, 127˚55'30"E.
c. 34˚45'00"N, 127˚48'00"E.
d. 34˚45'00"N, 127˚46'00"E.

Yosu Haeman.—A swept area bounded by lines joining the following positions:

a. 34˚51'48"N, 127˚48'24"E.
b. 34˚46'06"N, 127˚49'12"E.
c. 34˚46'06"N, 127˚49'12"E.
d. 34˚41'34"N, 127˚49'00"E.
e. 34˚44'45"N, 127˚46'57"E.
f. 34˚44'45"N, 127˚46'03"E.
g. 34˚45'15"N, 127˚46'03"E.
h. 34˚45'15"N, 127˚46'36"E.
i. 34˚46'09"N, 127˚46'03"E.
j. 34˚44'44"N, 127˚47'33"E.
k. 34˚51'48"N, 127˚47'03"E.

East of Dolsan Do (Tolsan Do).—A swept area bounded by lines joining the following positions:

a. 34˚43'15"N, 127˚51'03"E.
b. 34˚43'04"N, 127˚51'28"E.
c. 34˚43'21"N, 127˚51'28"E.
d. 34˚43'21"N, 127˚51'45"E.
e. 34˚43'12"N, 127˚51'45"E.
f. 34˚43'10"N, 127˚52'06"E.
g. 34˚43'21"N, 127˚52'06"E.
h. 34˚43'21"N, 127˚52'24"E.
i. 34˚43'21"N, 127˚52'24"E.
j. 34˚42'54"N, 127˚53'48"E.
k. 34˚43'21"N, 127˚53'48"E.
l. 34˚43'21"N, 127˚54'03"E.
m. 34˚42'54"N, 127˚54'03"E.
n. 34˚42'51"N, 127˚54'24"E.
o. 34˚42'51"N, 127˚54'24"E.
p. 34˚43'21"N, 127˚54'42"E.
q. 34˚42'48"N, 127˚54'42"E.
r. 34˚42'48"N, 127˚56'15"E.
s. 34˚42'30"N, 127˚56'54"E.
t. 34˚42'24"N, 127˚57'40"E.
u. 34˚41'39"N, 128˚01'12"E.
v. 34˚40'24"N, 128˚03'21"E.
w. 34˚40'21"N, 128˚03'18"E.
x. 34˚30'00"N, 128˚04'27"E.
y. 34˚30'00"N, 127˚53'33"E.
z. 34˚32'06"N, 127˚53'30"E.
aa. 34˚32'06"N, 127˚52'06"E.
ab. 34˚34'06"N, 127˚49'27"E.
ac. 34˚37'54"N, 127˚49'00"E.
ad. 34˚41'34"N, 127˚49'00"E.

Caution.—The area bounded by lines joining the following positions has not been swept:

a. 34˚40'42"N, 127˚56'48"E.
b. 34˚40'42"N, 127˚57'12"E.
c. 34˚40'18"N, 127˚57'12"E.
d. 34˚40'18"N, 127˚56'48"E.
e. 34˚37'48"N, 127˚59'36"E.
f. 34˚37'48"N, 127˚59'54"E.
g. 34˚37'36"N, 127˚59'54"E.
h. 34˚37'36"N, 127˚59'36"E.

Southeast of Namhae Do.—A swept area bounded by lines joining the following positions:

a. 34˚40'21"N, 128˚03'18"E.
b. 34˚40'21"N, 128˚09'24"E.
c. 34˚40'57"N, 128˚10'18"E.
d. 34˚40'45"N, 128˚11'15"E.
e. 34˚40'21"N, 128˚10'57"E.
f. 34˚40'21"N, 128˚12'45"E.
g. 34˚37'54"N, 128˚12'45"E.
h. 34˚36'39"N, 128˚12'00"E.
i. 34˚35'51"N, 128˚12'48"E.
j. 34˚34'26"N, 128˚10'48"E.
k. 34˚33'00"N, 128˚10'00"E.
l. 34˚33'00"N, 128˚08'42"E.
m. 34˚30'00"N, 128˚04'27"E.

Caution.—The area bounded by lines joining the following positions has not been swept:

a. 34˚37'12"N, 128˚07'00"E.
b. 34˚37'12"N, 128˚07'18"E.
c. 34˚37'00"N, 128˚07'18"E.
d. 34˚37'00"N, 128˚07'18"E.

Kumo Yolto (Geumo Yeoldo), Eastward.—A swept area bounded by lines joining the following positions:

a. 34˚33'57"N, 127˚48'30"E.
b. 34˚33'57"N, 127˚48'30"E.
c. 34˚32'06"N, 127˚52'06"E.
d. 34˚28'18"N, 127˚52'33"E.
e. 34˚30'10"N, 127˚54'12"E.
f. 34˚30'00"N, 127˚55'46"E.
g. 34˚25'42"N, 127˚51'32"E.
h. 34˚24'06"N, 127˚51'15"E.
i. 34˚24'48"N, 127˚49'58"E.
j. 34˚30'15"N, 127˚49'57"E.
k. 34˚30'45"N, 127˚49'54"E.

Chakto (Chak To) (Jag Do).—A swept area bounded by lines joining the following positions:

a. 34˚30'00"N, 128˚02'42"E.
b. 34˚22'49"N, 127˚55'36"E.
c. 34˚24'06"N, 127˚51'15"E.
d. 34˚25'09"N, 127˚51'26"E.
e. 34˚24'00"N, 127˚55'15"E.
f. 34˚30'00"N, 128˚01'09"E.

Sejondo (Sejon Do).—A swept area bounded by lines joining the following positions:

a. 34˚30'00"N, 127˚59'36"E
b. 34˚25'16"N, 128˚03'13"E.
c. 34˚25'16"N, 128˚04'30"E.
d. 34˚24'00"N, 128˚04'30"E.
e. 34˚24'00"N, 128˚01'30"E.
f. 34˚25'16"N, 128˚01'30"E.
g. 34˚25'16"N, 128˚02'02"E.
h. 34˚30'00"N, 127˚58'54"E.

Namhae Do, Eastward.—A swept area bounded by lines joining the following positions:

a. 34˚46'36"N, 128˚07'12"E.
b. 34˚52'40"N, 128˚13'18"E.
c. 34˚49'33"N, 128˚18'20"E.
d. 34˚48'33"N, 128˚17'33"E.
e. 34˚51'30"N, 128˚12'48"E.
f. 34˚51'26"N, 128˚07'12"E.
g. 34˚40'30"N, 128˚07'12"E.
h. 34˚40'30"N, 128˚06'00"E.
i. 34˚47'21"N, 128˚06'00"E.
j. 34˚47'51"N, 128˚05'21"E.
k. 34˚50'00"N, 128˚05'15"E.
l. 34˚50'00"N, 128˚06'00"E.

Namhae Do, Eastward.—A swept area bounded by lines joining the following positions:

a. 34˚48'06"N, 128˚07'12"E.
b. 34˚47'03"N, 128˚08'36"E.
c. 34˚47'46"N, 128˚09'20"E.
d. 34˚43'48"N, 128˚14'45"E.
e. 34˚43'03"N, 128˚13'57"E.
f. 34˚42'36"N, 128˚14'36"E.
g. 34˚41'42"N, 128˚13'36"E.
h. 34˚46'36"N, 128˚07'12"E.

Gadeog Sudo (Kadok Sudo) and Approaches (Korean Areas 4-9 and 4-43).—Swept areas bounded by lines joining the following positions:

Gadeog Sudo (Kadok Sudo)

a. 35˚06'07"N, 128˚38'37"E.
b. 35˚04'22"N, 128˚40'30"E.
c. 35˚01'47"N, 128˚48'06"E.
d. 34˚58'24"N, 128˚48'52"E.
e. 34˚58'14"N, 128˚47'38"E.
f. 35˚01'06"N, 128˚46'59"E.
g. 35˚01'06"N, 128˚46'59"E.
h. 35˚03'33"N, 128˚40'23"E.
i. 35˚03'32"N, 128˚39'48"E.
j. 35˚05'28"N, 128˚37'43"E.

Jinhae Man (Chinhae Man)

a. 35˚03'39"N, 128˚39'42"E.
b. 35˚01'43"N, 128˚38'47"E.
c. 35˚01'55"N, 128˚38'13"E.
d. 35˚04'05"N, 128˚39'16"E.

Okp'o (Ogpo)

a. 34˚57'35"N, 128˚46'18"E.
b. 34˚56'00"N, 128˚45'00"E.
c. 34˚55'25"N, 128˚46'00"E.
d. 34˚57'03"N, 129˚57'18"E.

Masan Man (Korean Area 4-10).—Swept areas bounded by lines joining the following positions:

1a. 35˚08'01"N, 128˚36'10"E.
1b. 35˚08'09"N, 128˚36'26"E.
1c. 35˚07'16"N, 128˚37'07"E.
1d. 35˚07'26"N, 128˚37'11"E.
1e. 35˚07'26"N, 128˚37'24"E.
1f. 35˚07'54"N, 128˚37'24"E.
1g. 35˚08'26"N, 128˚37'38"E.
1h. 35˚07'56"N, 128˚39'18"E.
1i. 35˚05'59"N, 128˚38'27"E.
1j. 35˚05'40"N, 128˚38'00"E.

2a. 35˚10'48"N, 128˚34'13"E.

2b. 35˚10'56"N, 128˚34'23"E.
2c. 35˚10'04"N, 128˚35'23"E.
2d. 35˚11'12"N, 128˚34'57"E.
2e. 35˚11'16"N, 128˚35'11"E.
2f. 35˚09'44"N, 128˚35'45"E.
2g. 35˚08'08"N, 128˚36'24"E.
2h. 35˚08'01"N, 128˚36'12"E.
2i. 35˚09'39"N, 128˚35'33"E.

Busan (Pusan) (Korean Areas 4-8 and 4-41)

1. An area inside the harbor has been swept and is bounded, as follows:
   a. North light of the S breakwater.
   b. Tungmudari Am.
   c. The coast 0.125 mile W of Mundol Mal, then along the coastline to
   d. 129˚02'48"E.
   e. then 336˚ to S inshore corner of Pier No. 1, then along the shore to
   f. The midpoint of theN face Pier No. 4 (35˚06'54"N., 129˚03'13"E.).
   g. 35˚07'00"N, 129˚03'53"E.
   h. South light of the N breakwater.

The NW section of the harbor is reported unswept and dangerous. When anchoring in the above area and in anchorages (c) and (d), vessels should walk out the anchor to full riding scope due to danger of impact on inert torpex loaded mines.

2. A northern anchorage with a swept area bounded by lines joining the following positions:
   a. 35˚03'26"N, 129˚06'06"E.
   b. 35˚03'39"N, 129˚05'30"E.
   c. 35˚03'50"N, 129˚05'24"E.
   d. 35˚04'06"N, 129˚05'32"E.
   e. 35˚04'10"N, 129˚05'45"E.
   f. 35˚04'27"N, 129˚06'01"E.
   g. 35˚04'37"N, 129˚06'03"E.
   h. 35˚04'42"N, 129˚05'54"E.
   i. 35˚04'30"N, 129˚04'55"E.
   j. 35˚04'51"N, 129˚04'50"E.
   k. 35˚04'59"N, 129˚05'06"E.
   l. 35˚05'15"N, 129˚04'26"E.
   m. 35˚05'26"N, 129˚04'23"E.
   n. 35˚05'36"N, 129˚04'14"E.
   o. 35˚05'49"N, 129˚04'17"E.
   p. 35˚05'56"N, 129˚04'04"E.
   q. 35˚06'21"N, 129˚04'21"E.
   r. 35˚06'16"N, 129˚04'46"E.
   s. 35˚06'05"N, 129˚04'50"E.
   t. 35˚05'58"N, 129˚05'10"E.
   u. 35˚06'15"N, 129˚05'08"E.
   v. 35˚06'21"N, 129˚05'15"E.
   w. 35˚06'23"N, 129˚05'35"E.
   x. 35˚06'18"N, 129˚05'43"E.
   y. 35˚05'42"N, 129˚05'51"E.
   z. 35˚05'35"N, 129˚06'09"E.
   aa. 35˚05'43"N, 129˚06'40"E.
   ab. 35˚05'25"N, 129˚07'36"E.
   ac. 35˚05'25"N, 129˚07'45"E.
   ad. 35˚05'03"N, 129˚07'36"E.

Yeong Do (Yong Do), Eastward.—A swept area bounded by lines joining the following positions:
   a. 35˚03'26"N, 129˚06'06"E.
   b. 35˚01'42"N, 129˚06'05"E.
   c. 35˚01'23"N, 129˚06'02"E.
   d. 34˚59'08"N, 129˚06'00"E.
   e. 34˚59'30"N, 129˚09'09"E.
   f. 35˚02'45"N, 129˚08'52"E.
   g. 35˚03'22"N, 129˚07'50"E.
   h. 35˚03'22"N, 129˚07'50"E.
   i. 35˚05'00"N, 129˚08'22"E.
   j. 35˚07'57"N, 129˚11'30"E.
   k. 35˚05'03"N, 129˚07'36"E.

Yeong Do (Yong Do), Westward.—A swept area bounded by lines joining the following positions:
   a. 35˚01'23"N, 129˚06'02"E.
   b. 35˚01'58"N, 129˚05'24"E.
   c. 35˚02'16"N, 129˚05'18"E.
   d. 35˚02'13"N, 129˚05'06"E.
   e. 35˚02'22"N, 129˚05'20"E.
   f. 35˚03'50"N, 129˚03'36"E.
   g. 35˚04'13"N, 129˚02'42"E.
   h. 35˚03'28"N, 129˚01'33"E.
   i. 35˚03'00"N, 129˚01'09"E.
   j. 35˚02'30"N, 129˚01'09"E.
   k. 35˚02'03"N, 129˚01'39"E.
   l. 35˚00'57"N, 128˚57'38"E.
   m. 34˚59'47"N, 128˚50'55"E.
   n. 34˚56'36"N, 128˚50'10"E.
   o. 34˚59'27"N, 129˚02'14"E.
   p. 34˚58'45"N, 129˚02'30"E.
   q. 34˚59'08"N, 129˚06'00"E.

Suyong Man.—A swept channel, 0.5 mile wide, with its centerline joining the following positions:
   a. 35˚02'40"N, 129˚07'35"E.
   b. 35˚07'37"N, 129˚08'40"E.
   c. 35˚08'34"N, 129˚08'16"E.

WEST COAST

Special caution.—Extensive minelaying took place, especially between 34˚15'N and 35˚10'N, and 125˚50'E and 126˚30'E. Mariners should not enter unswept areas without obtaining routing instructions from the Korean naval authorities.

Naja Kundo.—The following approach routes, anchorages, and entrance channels into Mokp'o Hang have been swept:

1. Northern approach—Chaewonso Sudo (Zaien Nishi Suido) and Myeondo Sudo (Mento Suido)—250m wide, with its centerline joining the following positions:
   a. 35˚10'00"N, 126˚00'00"E.
   b. 35˚05'00"N, 126˚00'00"E.
   c. 34˚59'36"N, 126˚04'06"E.
   d. 34˚53'48"N, 126˚08'36"E.
   e. 34˚52'06"N, 126˚10'00"E.
   f. 34˚46'18"N, 126˚17'18"E.

2. Anchorage I—bounded by lines joining the following positions:
   a. 34˚55'18"N, 126˚07'12"E.
   b. 34˚55'18"N, 126˚06'36"E.
   c. 34˚53'54"N, 126˚07'36"E.
   d. 34˚53'54"N, 126˚08'18"E.
3. Anchorage II—bounded by lines joining the following positions:
   a. 34˚51'12"N, 126˚11'18"E.
   b. 34˚51'42"N, 126˚11'48"E.
   c. 34˚50'36"N, 126˚13'18"E.
   d. 34˚50'06"N, 126˚12'42"E.
4. Western approach—East of Odonam Satae—250m wide, with its centerline joining the following positions:
   a. 34˚45'00"N, 125˚48'00"E.
   b. 34˚47'00"N, 125˚52'48"E.
   c. 34˚56'30"N, 126˚59'36"E.
   d. 34˚59'36"N, 126˚04'06"E.
5. Southern approach—Chongdung Hae—250m wide, with its centerline joining the following positions:
   a. 34˚21'06"N, 125˚50'00"E.
   b. 34˚30'30"N, 126˚02'00"E.
   c. 34˚32'48"N, 126˚07'12"E.
   d. 34˚32'54"N, 126˚11'48"E.
   e. 34˚36'42"N, 126˚15'00"E.
   f. 34˚40'30"N, 126˚14'42"E.
   g. 34˚41'00"N, 126˚15'12"E.
   h. 34˚42'42"N, 126˚15'30"E.
   i. 34˚46'18"N, 126˚17'18"E.

6. Entrance channel into Mokp'o Hang—180m wide, with its centerline joining the following positions:
   a. 34˚46'06"N, 126˚17'06"E.
   b. 34˚45'06"N, 126˚19'24"E.
   c. 34˚47'18"N, 126˚21'06"E.
   d. then into the harbor on course 128˚.
7. Within the Mokp'o Hang swept area—An area bounded by lines joining the following positions is considered safe for shipping and is recommended for vessels calling at Mokp'o Hang, but does not include the immediate vicinity of Pul To (Butsu To) (34˚26'N, 126˚04'E):
   a. 34˚24'18"N, 125˚55'00"E.
   b. 34˚25'30"N, 126˚01'42"E.
   c. 34˚25'42"N, 126˚01'36"E.
   d. 34˚26'36"N, 126˚01'48"E.
   e. 34˚29'42"N, 126˚07'06"E.
   f. 34˚29'42"N, 126˚09'12"E.
   g. 34˚27'30"N, 126˚05'30"E.
   h. 34˚26'30"N, 126˚06'30"E.
   i. 34˚26'18"N, 126˚06'12"E.
   j. 34˚27'00"N, 126˚05'18"E.
   k. 34˚24'06"N, 126˚05'06"E.
   l. 34˚20'12"N, 126˚06'12"E.
   m. 34˚19'24"N, 126˚06'42"E.
   n. 34˚18'42"N, 126˚08'30"E.
   o. 34˚17'30"N, 126˚12'42"E.
   p. 34˚16'12"N, 126˚10'48"E.
   q. 34˚16'30"N, 126˚07'00"E.
   r. 34˚18'48"N, 126˚05'30"E.
   s. 34˚24'12"N, 126˚03'12"E.
   t. 34˚24'36"N, 126˚02'42"E.
   u. 34˚23'12"N, 125˚55'12"E.

Incheon Hang (Inch'on Hang) Approaches—Eastern channel (Tong Sudo)—250m wide, with its centerline joining the following positions:
   a. 37˚00'00"N, 126˚11'06"E.
   b. 37˚02'30"N, 126˚15'00"E.
   c. 37˚07'18"N, 126˚19'36"E.
   d. 37˚09'06"N, 126˚20'24"E.
   e. 37˚10'00"N, 126˚22'06"E.
   f. 37˚13'06"N, 126˚25'12"E.
   g. 37˚16'30"N, 126˚24'54"E.
   h. 37˚20'06"N, 126˚28'24"E.
   i. 37˚20'42"N, 126˚30'54"E.
   j. 37˚22'00"N, 126˚32'06"E.

Incheon Hang (Inch'on Hang) Approaches—Western Channel (So Sudo)—250m wide, with its centerline joining the following positions:
   a. 37˚00'00"N, 126˚05'12"E.
   b. 37˚08'06"N, 126˚08'24"E.
   c. 37˚10'30"N, 126˚11'12"E.
   d. 37˚16'00"N, 126˚14'36"E.
   e. 37˚19'18"N, 126˚19'36"E.
   f. 37˚20'12"N, 126˚23'18"E.
   g. 37˚20'42"N, 126˚30'54"E.

Asan Man.—The following approach routes, anchorages, and entrance channels into Asan Man have been swept:

1. Northern approach channel (NE of Ch'ang So)—200m wide, with its centerline joining the following positions:
   a. 37˚13'06"N, 126˚25'06"E.
   b. 37˚10'48"N, 126˚25'12"E.
   c. 37˚09'12"N, 126˚26'54"E.
   d. 37˚08'06"N, 126˚30'48"E.
2. Main approach channel (N of Pung Do and Ipp'a Do)—200m wide, with its centerline joining the following positions:
   a. 37˚07'18"N, 126˚19'36"E.
   b. 37˚08'06"N, 126˚30'48"E.
   c. 37˚08'06"N, 126˚30'54"E.
   d. 37˚07'24"N, 126˚33'06"E.
   e. 37˚02'48"N, 126˚40'42"E.
   f. 37˚01'18"N, 126˚42'42"E.
   g. 37˚01'06"N, 126˚43'48"E.
   h. 37˚00'00"N, 126˚44'48"E.

3. Alternative channel in the harbor—200m wide, with its centerline joining the following positions:
   a. 37˚01'18"N, 126˚42'42"E.
   b. 37˚00'48"N, 126˚43'00"E.
   c. 37˚00'12"N, 126˚43'30"E.
   d. 36˚59'18"N, 126˚47'00"E.
4. Anchorage—bounded by lines joining the following positions:
   a. 36˚59'30"N, 126˚47'00"E.
   b. 36˚59'24"N, 126˚48'30"E.
   c. 36˚58'30"N, 126˚50'00"E.
   d. 36˚57'42"N, 126˚50'00"E.
   e. 36˚58'36"N, 126˚48'30"E.

f. 36˚58'54"N, 126˚47'00"E.

Gunsan Hang (Kunsan Hang).—A swept approach channel, 900m wide, with the centerline joining the following positions:

a. 35˚56'42"N, 126˚13'00"E.
b. 35˚56'42"N, 126˚29'00"E.

Caution.—Entry should be made only at HW.

Navigational Information

Enroute Volume

Pub. 157, Sailing Directions (Enroute) Coasts of Korea and China.

Maritime Claims

The maritime territorial claims of South Korea are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	No specified limits.

* Claims strait baselines. A high seas corridor remains in Korea Strait (3 mile claim in Korea Strait). Requires advance permission or notification for innocent passage of warships in the territorial sea.

Maritime Boundary Disputes

Dispute with South Korea over the South Korean-administered Liancourt Rocks (Dokdo) (Take-shima) (37˚14'N., 131˚53'E.).

Periodic maritime disputes with North Korea.

Pilotage

Pilotage is compulsory for entry, departure, and berth shifting in all South Korean ports. Pilotage services are provided by the Korea Maritime Pilots Association (KMPA), which operates the pilotage districts listed in the accompanying table.

Regulations

Notification of ETA

Vessels bound for ports in South Korea should advise local agents of their ETA 72 hours, 48 hours, 24 hours, and 12 hours in advance. The port authorities can then be notified and arrangements made for pilot, tugs, anchorage, and berth.

Navigation in Designated Area

Vessels carrying dangerous cargo and tugs in charge of tows greater than 200m long are requested to inform the relevant Maritime Police Authority of the vessel's name and call sign and also to monitor the information using radiotelephone and other available methods 1 hour before entering the designated area.

Restricted Zone

A restricted zone has been established within 5 miles of the coast of South Korea between Ongdo (36˚39'N., 126˚01'E.), on the W coast, and Chongdongjin Dan (37˚41'N., 129˚03'E.), on the E coast. It is applicable to tankers, as follows:

1. Tankers of 1,500 tons and over carrying diesel or Low-sulphur Residual Fuel Oils (LRFO).
2. Tankers of 1,500 tons and over carrying noxious liquid material.

Tankers entering or departing ports of call must use the shortest possible transit route between the restricted zone and the port of call.

The restricted area encompasses the area between the coast and lines joining the following points:

1. The outermost point of Ongdo (36˚39'N., 126˚01'E.).
2. The outermost point of Hwang Do (36˚14'N., 125˚58'E.).
3. The outermost point of Ochong Do (36˚07'N., 125˚59'E.).
4. The outermost point of Sangwangdungdo (35˚40'N., 126˚07'E.).
5. The outermost point of Hoeng Do (35˚20'N., 125˚59'E.).
6. The outermost point of Sobichi Do (35˚13'N., 125˚54'E.).
7. The outermost point of Chilbalto (34˚47'N., 125˚47'E.).
8. The outermost point of Uido (34˚37'N., 125˚48'E.).
9. The outermost point of Sogochado (34˚15'N., 125˚55'E.).
10. The outermost point of Tonggocha Do (34˚14'N., 126˚36'E.).
11. The outermost point of Chagaedo (34˚06'N., 126˚36'E.).
12. The outermost point of Yongman Do (34˚11'N., 127˚21'E.).
13. The outermost point of Taeduyokso (34˚15'N., 127˚32'E.).
14. The outermost point of Chag To (34˚25'N., 127˚54'E.).
15. The outermost point of Sejon Do (34˚30'N., 128˚05'E.).
16. The outermost point of Ko Am (34˚30'N., 128˚29'E.).
17. The outermost point of Namyo Do (34˚40'N., 128˚47'E.).
18. Position 35˚00'N, 129˚08'E.
19. 3 miles off Kanjol Gap Light (35˚22'N., 129˚22'E.).
20. 4 miles off Ul Gi Light (35˚30'N., 129˚27'E.).
21. 5 miles off Kuryongpo Hang Light (35˚59'N., 129˚33'E.).
22. 4 miles off Changgigot Light (36˚05'N., 129˚34'E.).
23. 4 miles off Wolpo Man Light (36˚11'N., 129˚23'E.).
24. 4 miles off Chiku To Light (36˚30'N., 129˚27'E.).
25. 4 miles off Hwamo Mal Light (36˚46'N., 129˚29'E.).
26. 3 miles off Chukpyon Light (37˚03'N., 129˚26'E.).
27. 3 miles off Imwon Mal Light (37˚14'N., 129˚21'E.).
28. 3 miles off Chongdongjin Dan Light (37˚41'N., 129˚03'E.).
29. The coast at Chongdongjin Dan.

Search and Rescue

The Korean Coast Guard (KCG) coordinates search and rescue operations. There are a total of 13 regional Rescue Coordination Centers (RCC) and Rescue Coordination Subcenters (RSC) which operate Search and Rescue Command Centers on a 24-hour basis. The RCCs and RSCs are located, as follows:

1. Busan RCC (E-mail: mrccbusan@kcg.go.kr).
2. Donghae RCC (E-mail: mrccdonghae@kcg.go.kr).
3. Inchon RCC (E-mail: mrccinchon@kcg.go.kr).
4. Mokpo RCC (E-mail: mrccmokpo@kcg.go.kr).
5. Jeju PCC (E-mail: mrccjeju@kcg.go.kr).
6. Sokcho RSC.
7. Taean RSC.
8. Gunsan RSC.
9. Yeosu RSC.
10. Pohang RSC.
11. Ulsan RSC.
12. Tongyong RSC.
13. Wando RSC.

The KCG Operations Center Headquarters Inchon can be contacted by e-mail, as follows:

mrcckorea@kcg.go.kr

A continuous listening watch on is maintained on international distress frequencies on VHF, MF, and DSC.

Korean Ship Reporting System (KOSREP)

The Korean Ship Reporting System (KOSREP) is a voluntary ship reporting system established by the Korea National Maritime Police Agency to assist in the coordination of Search and Rescue operations in the vicinity of Korea.

Participation is KOSREP is voluntary. The following types of vessels are encouraged to participate in KOSREP:

1. International passenger vessels.
2. Vessels of 300 gross tons and over on international voyages.
3. Vessels navigating in the KOSREP area for a period of time greater than 12 hours.
4. Vessels not under command, restricted in their ability to maneuver, or constrained by their draft.
5. Towing vessels with a length of tow greater than 200m.
6. Vessels carrying dangerous cargo, crude oil, or chemicals.

Reporting area.—The KOSREP reporting area is bound by lines joining the following positions:

a. East coast of Korea at latitude 38˚30'N.
b. 38˚30'N, 133˚00'E.
c. 39˚40'N, 134˚00'E.
d. 40˚00'N, 135˚00'E.
e. 37˚20'N, 135˚00'E.
f. 35˚00'N, 130˚00'E.
g. 34˚40'N, 129˚10'E.
h. 30˚00'N, 125˚25'E.
i. 30˚00'N, 123˚05'E.
j. 30˚44'N, 123˚25'E.
k. 33˚33'N, 121˚00'E.
l. 35˚26'N, 121˚00'E.
m. 36˚48'N, 122˚44'E.
n. 38˚00'N, 123˚22'E.
o. West coast of Korea at Latitude 38˚00'N.

Types of KOSREP reports.—There are four types of KOSREP reports:

Korea Maritime Pilots Association (KMPA) Pilotage Districts

Branch	E-mail address	Internet address
West Coast		
Inchon Branch	icpilot@kmpilot.or.kr	—
Kunsan (Gunsan) Branch	gspilot@kmpilot.or.kr	—
Mokpo Branch	mokpilot@kmpilot.or.kr	—
Daesan Branch	dspilot@kmpilot.or.kr	—
Pyongtaek Branch	ptpilot@daum.net	—
South Coast		
Yeosu (Yosu) Branch	yspilot3@kmpilot.or.kr	—
Masan Branch (including Jinhae)	mspilot@kmpilot.or.kr	—
Pusan (Busan) Branch	bspilot@kmpilot.or.kr	http://www.pilotbusan.co.kr
Ulsan Branch	uspilot@kmpilot.or.kr	http://www.ulsanpilot.co.kr
East Coast		
Pohang Branch	phpilot2001@kmpilot.or.kr	—
Mukho (Mugo) Branch (including Pukpyong (Bugpyeong) and Sokcho (Sogcho)	dhpilot@kmpilot.or.kr	—

1. **Sailing Plan (SP).—**The SP contains the basic information needed to enter the vessel into KOSREP. The report should be made when the vessel enters the KOSREP area from sea or when the vessel departs from a port within the KOSREP area.
2. **Position Report (PR).—**The PR verifies the information contained in the SP. The first PR should be sent within 12 hours of entering the KOSREP area, either from sea or after departing from port, and should subsequently be sent at a frequency of not less than every 12 hours until the Final Report is submitted. It is recommended that a PR be sent more frequently if the vessel is in heavy weather or operating under other dangerous conditions.
3. **Deviation Report (DR).—**The DR updates the information contained in the original SP. A DR should be sent, as follows:
   a. When the vessel's position deviates by 25 miles or more from its original track.
   b. When the port of destination changes.
4. **Final Report (FR).—**The FR terminates the vessel's participation in KOSREP and is sent, as follows:
   a. Prior to or upon arrival at a port.
   b. When leaving the seaward boundary of the KOSREP area.

The first line of a KOSREP message is one of the following:

Type of Message	Format
SP	KOSREP/SP//
PR	KOSREP/PR//
DR	KOSREP/DR//
FR	KOSREP/FR//

In all subsequent lines, a stroke (/) is used to separate subitems, while two strokes (//) are used to mark the end of each line. See Appendix II for more information on the format of KOSREP messages.

Transmission of KOSREP messages.—As far as practicable, reports should be sent through the Marine Rescue Coordination Center (MRCC) closest to the vessel's position. The following MRCCs accespt KOSREP messages:

1. MRCC Cheju.
2. MRCC Inchon.
3. MRCC Mokpo.
4. MRCC Pusan.
5. MRCC Tonghae.

The following Korean National Police Agency Coastal Radio Stations accept KOSREP messages, using the calling frequency of VHF channel 16 and the working frequency of VHF channel 9:

1. Sokcho Maritime Polica Radio.
2. Taean Maritime Polica Radio.
3. Kunsan Maritime Polica Radio.
4. Yosu Maritime Polica Radio.
5. Pohang Maritime Polica Radio.
6. Ulsan Maritime Polica Radio.
7. Tongyong Maritime Polica Radio.

KOSREP reports are also accepted by the Korean National Police Agency Headquarters Rescue Coordination Center, as follows:

1. Telephone: +82-32-8830461
2. Facsimile: +82-32-8819595
3. Telex: +801 K24920

Overdue reports.—In order to verify the safety of a vessel due to late reporting or addressing the request of assistance for any search and rescue operation, any MRCC may call the vessel concerned.

Operating authority.—Questions about KOSREP may be addressed to the Guard and Rescue Division or the Computer and Communication Division of the Guard and Rescue Bureau of the Korean National Police Agency, as follows:

Mail: Korean National Police Agency
Guard and Rescue Bureau
1-105 Buksung Dong, Jung-gu
Inchon City, 400-707
Republic of Korea

Telephone: +82-32-8829555 (Guard and Rescue Division)
+82-32-8831434 (Computer and Communication Division)

Facsimile: +82-32-8819594

Web site: http://www.nmpa.go.kr

Signals

Whistle Signals

The following whistle signals are used in Korean harbors:

Action	Signal
Entering harbor	Two long blasts.
Leaving harbor	One long blast.
Calling pilot	One long blast, one short blast, one long blast.
Calling lighter	One long blast, two short blasts, one long blast.
Calling cargo lighter	One long blast, one short blast.
Calling launch	One short blast, one long blast.
Recalling all crew members	Two short blasts, one long blast.
Requiring medical assistance	One short blast, one long blast, one short blast.
Emergency	Three short blasts, three long blasts, three short blasts.

Action	Signal
Getting underway	Two short blasts, two long blasts, two short blasts.
Finish loading	One long blast, three short blasts.

Storm Signals

The following storm warning signals are used in Korean waters to indicate the expected force of winds, regardless of direction:

By day	At night	Meaning
A red ball	A white light above a blue light	Force 7 to 8
A red cone, point up	Two red lights, disposed vertically	Force 9 to 11
A red cross	A blue light between two red lights, disposed vertically	Typhoon—Force 12

Time Zone

The Time Zone description is INDIA (-9). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in South Korea are, as follows:

1. Nampo. (Government of South Korea)
2. Approaches to Inchon. (Government of South Korea)
3. Off Ong Do. (Government of South Korea)
4. Maemul Sudo. (Government of South Korea)
5. Off Bogil Do. (Government of South Korea)
6. Approaches to Wando Hang. (Government of South Korea)
7. North of Komudo. (Government of South Korea)
8. Approaches to Gwangyang Hang. (Government of South Korea)
9. Off Hong Do. (Government of South Korea)
10. Approaches to Masan. (Government of South Korea)
11. Approaches to Pusan. (Government of South Korea)
12. Approaches to Pohang Hang. (Government of South Korea)
13. Approaches to Kamchon. (Government of South Korea)
14. Approaches to Wonsan. (Government of South Korea)
15. Hungnam. (Government of South Korea)
16. Chongjin. (Government of South Korea)
17. Najin. (Government of South Korea)

Note.—Oil and chemical tankers are prohibited from using these schemes.

U.S. Embassy

The U.S. Embassy is situated at 32 Sejongno, Jonno-gu, Seoul.

The mailing addresses are, as follows:

1. South Korea address—
   32 Sejongno, Jonno-gu
   Seoul 110-710
2. U. S. address—
   APO AP 96205-5550

U. S. Embassy South Korea Home Page
http://seoul.usembassy.gov

Appendix I

South Korea Firing Areas			
Controlling Authority	**Area**	**Location**	**Limits**
East Coast of Korea			
Army	R-77	East of Geojin Hang	An area bound by the following points: a. 38˚32'N, 128˚25'E. b. 38˚34'N, 128˚31'E. c. 38˚32'N, 128˚32'E. d. 38˚30'N, 128˚31'E.
Navy	R-115	Southwest of Ulluengdo	An area bound by the following points: a. 37˚24'00"N, 129˚45'00"E. b. 37˚13'30"N, 131˚00'00"E. c. 36˚49'00"N, 131˚00'00"E.
	R-119	East of Ulsan Hang	An area bound by the following points: a. 35˚47'00"N, 129˚40'05"E. b. 35˚43'00"N, 130˚12'12"E. c. 35˚37'36"N, 130˚12'12"E. d. 35˚27'56"N, 129˚51'48"E. e. 35˚28'00"N, 129˚40'05"E.
	R-120	Northeast of Yeong-il Man	An area bound by the following points: a. 36˚44'N, 130˚25'E. b. 36˚25'N, 130˚55'E. c. 36˚17'N, 130˚55'E. d. 36˚02'N, 130˚29'E. e. 36˚02'N, 130˚25'E.
	R-121	East of Geojin Hang	An area bound by the following points: a. 38˚25'N, 128˚45'E. b. 38˚25'N, 129˚30'E. c. 38˚10'N, 129˚30'E. d. 38˚10'N, 129˚00'E. e. 38˚17'N, 129˚00'E. f. 38˚17'N, 128˚45'E.
	R-135	Approaches to Gisamun	An area bound by the following points: a. 38˚09'30"N, 129˚04'00"E. b. 38˚06'00"N, 128˚57'45"E. c. 37˚33'30"N, 129˚24'15"E. d. 37˚37'00"N, 128˚30'20"E.
	R-136	Approaches to Samcheok	An area bound by the following points: a. 37˚25'00"N, 129˚30'45"E. b. 37˚28'10"N, 129˚37'00"E. c. 37˚06'30"N, 129˚47'10"E. d. 37˚04'30"N, 129˚40'00"E.
Air Force	R-74	Northeast of Yeong-il Man	An area bound by the following points: a. 36˚52'N, 130˚00'E. b. 36˚50'N, 130˚13'E. c. 36˚44'N, 130˚25'E. d. 36˚02'N, 130˚25'E. e. 36˚02'N, 130˚00'E.
	R-107	East of Gangnueng	An area bound by the following points: a. 38˚08'N,129˚51'E. b. 38˚08'N,130˚10'E. c. 37˚39'N,130˚10'E. d. 37˚42'N,129˚51'E.

South Korea Firing Areas			
Controlling Authority	**Area**	**Location**	**Limits**
East Coast of Korea (continued)			
National Maritime Police	Sokcho	East of Sokcho Hang	An area, 5 miles in radius, centered on position 38˚11'09.8"N, 128˚49'51.6"E.
	Donghae	Northeast of Mukho Hang	An area, 5 miles in radius, centered on position 37˚40'10.1"N, 129˚15'51.5"E.
	Pohang	Northeast of Yeong-il Man	An area bound by the following points: a. 37˚04'10.4"N, 129˚59'51.3"E. b. 36˚25'10.8"N, 131˚11'51.0"E. c. 36˚00'10.9"N, 130˚51'51.2"E. d. 36˚08'10.8"N, 129˚59'51.4"E.
	Ulsan	East of Ulgi Light	An area, 5 miles in radius, centered on position 35˚35'50.0"N, 129˚42'55.6"E.
South Coast of Korea			
Navy	R-72	Southeast of Yokjido	An area bound by the following points: a. 34˚18'N, 128˚00'E. b. 34˚18'N, 128˚35'E. c. 34˚00'N, 128˚35'E. d. 34˚00'N, 128˚00'E.
	R-99	Southeast of Geojedo	An area bound by the following points: a. 34˚45'N, 128˚45'E. b. 34˚48'N, 129˚00'E. c. 34˚37'N, 129˚06'E. d. 34˚20'N, 128˚52'E. e. 34˚20'N, 128˚41'E.
	R-100	Southwest of Pusan Hang	An area, 4 miles in radius, centered on position 34˚53'N, 128˚57'E.
	R-118	East of Jejudo	An area bound by the following points: a. 34˚00'N, 127˚40'E. b. 34˚00'N, 128˚30'E. c. 33˚10'N, 127˚50'E. d. 33˚10'N, 127˚40'E.
	R-126	Southeast of Chuja Gundo	An area bound by the following points: a. 34˚00'N, 125˚48'E. b. 34˚00'N, 126˚00'E. c. 33˚30'N, 126˚00'E. d. 33˚30'N, 125˚48'E.
	R-128	South of Seogwipo Hang	An area bound by the following points: a. 33˚00'N, 126˚37'E. b. 32˚40'N, 126˚45'E. c. 32˚40'N, 126˚28'E.
National Maritime Police	Pusan	Southwest of Pusan Hang	An area, 4 miles in radius, centered on position 34˚53'11.3"N, 128˚56'51.9"E.
	Tongyeong	East of Yokjido	An area, 5 miles in radius, centered on position 34˚38'31.4"N, 128˚27'52.1"E.
	Yeosu	Southwest of Yokjido	An area, 5 miles in radius, centered on position 34˚29'56.4"N, 128˚04'52.2"E
	Wando	South of Cheongsando	An area, 5 miles in radius, centered on position 34˚04'11.5"N, 126˚51'52.7"E.
	Jeju	Northwest of Jejudo	An area, 5 miles in radius, centered on position 33˚40'11.6"N, 126˚17'52.9"E.

South Korea Firing Areas			
Controlling Authority	**Area**	**Location**	**Limits**
West Coast of Korea			
Navy	R-116	Southwest of Daecheongdo	An area, 4 miles in radius, centered on position 37˚47'55"N, 124˚39'33"E.
	R-117	Northwest of Jaeundo	An area, 4 miles in radius, centered on position 34˚42'30"N, 125˚44'00"E.
	R-123	West of Eocheongdo	An area bound by the following points: a. 36˚00'N, 125˚00'E. b. 36˚00'N, 125˚30'E. c. 35˚35'N, 125˚30'E. d. 35˚35'N, 125˚00'E.
	R-124	Southwest of Deokjeokdo	An area bound by the following points: a. 37˚06'N, 125˚42'E. b. 37˚06'N, 126˚10'E. c. 36˚55'N, 125˚57'E. d. 36˚55'N, 125˚42'E.
	R-125	Southwest of Daeheuksan-do	An area, 5 miles in radius, centered on position 34˚33'N, 125˚21'E.
	R-131	Approaches to Baeng-nyeongdo	An area bound by the following points: a. 37˚59'00"N, 124˚21'25"E. b. 37˚59'00"N, 124˚38'10"E. c. 37˚54'00"N, 124˚38'10"E. d. 37˚54'00"N, 124˚21'25"E.
	R-132	Southeast of Baengnyeong-do	An area bound by the following points: a. 37˚57'00"N, 124˚41'00"E. b. 37˚57'00"N, 124˚44'00"E. c. 37˚45'00"N, 124˚50'00"E. d. 37˚45'00"N, 124˚47'00"E.
	R-133	Northwest of Chochido	An area, 2 miles in radius, centered on position 37˚22'20"N, 126˚11'35"E.
	R-134	Approaches to Yeon-pyeongdo	An area bound by the following points: a. 37˚38'40"N, 124˚45'00"E. b. 37˚42'00"N, 124˚45'00"E. c. 37˚42'00"N, 124˚56'00"E. d. 37˚37'30"N, 125˚01'30"E. e. 37˚34'00"N, 125˚14'45"E. f. 37˚40'00"N, 125˚32'00"E. g. 37˚41'00"N, 125˚39'30"E. h. 37˚37'20"N, 125˚39'00"E. i. 37˚30'45"N, 125˚24'00"E. j. 37˚26'00"N, 125˚24'00"E. k. 37˚26'00"N, 125˚04'00"E. l. 37˚32'15"N, 124˚48'00"E.
Air Force	R-80	Southwest of Gyeongnyeol-biyeoldo	An area bound by the following points: a. 36˚35'N, 124˚50'E. b. 36˚35'N, 125˚42'E. c. 36˚05'N, 125˚42'E. d. 36˚05'N, 124˚50'E.
	R-84	Southwest of Anma Gundo	An area bound by the following points: a. 35˚15'N, 124˚50'E. b. 35˚15'N, 125˚42'E. c. 34˚50'N, 125˚42'E. d. 34˚50'N, 124˚50'E.

South Korea Firing Areas			
Controlling Authority	**Area**	**Location**	**Limits**
West Coast of Korea (continued)			
Air Force	R-88	North of Gyeongnyeol-biyeoldo	An area bound by the following points: a. 37˚06'00"N, 124˚50'00"E. b. 37˚10'10"N, 125˚36'00"E. c. 36˚35'00"N, 125˚36'00"E. d. 36˚35'00"N, 124˚50'00"E.
	R-97A	Approaches to Daecheon Hang	An area bound by the following points: a. 36˚20'N, 126˚31'E. b. 36˚18'N, 126˚35'E. c. 36˚02'N, 126˚24'E. d. 36˚13'N, 126˚11'E.
	R-97B	Approaches to Daecheon Hang	An area bound by the following points: a. 36˚20'00.0"N, 125˚57'00.0"E. b. 36˚20'00.0"N, 126˚10'00.0"E. c. 36˚22'07.5"N, 126˚14'43.7"E. d. 36˚21'22.5"N, 126˚30'07.6"E. e. 36˚14'00.0"N, 126˚38'00.0"E. f. 35˚53'00.0"N, 126˚22'00.0"E. g. 36˚12'00.0"N, 126˚03'00.0"E. h. 36˚14'00.0"N, 125˚57'00.0"E.
	R-97C	Approaches to Daecheon Hang	An area bound by the following points: a. 36˚21'29.5"N, 126˚22'54.6"E. b. 36˚21'22.5"N, 126˚30'07.6"E. c. 36˚14'00.0"N, 126˚38'00.0"E. d. 35˚41'00.0"N, 125˚44'00.0"E. e. 35˚51'00.0"N, 125˚35'00.0"E.
	R-97D	Approaches to Daecheon Hang	An area bound by the following points: a. 36˚21'17.5"N, 126˚24'43.7"E. b. 36˚21'22.5"N, 126˚30'07.6"E. c. 36˚14'00.0"N, 126˚38'00.0"E. d. 35˚35'00.0"N, 126˚06'00.0"E. e. 35˚42'00.0"N, 125˚52'00.0"E.
	R-104	Southeast of Wido	An area, 5 miles in radius, centered on position 35˚32'51"N, 126˚26'26"E.
	R-105	Southeast of Eocheongdo	An area, 11 miles in radius, centered on position 35˚53'26"N, 126˚04'36"E.
Agency for Development	R-108A	Approaches to Anheung Hang	No. 1 Firing Range—An area bound by the following points: a. 36˚40'46.3"N, 126˚09'16.7"E. b. 36˚40'36.3"N, 126˚11'58.7"E. c. 36˚33'08.4"N, 126˚13'49.7"E. d. 36˚32'58.4"N, 126˚09'04.7"E.
	R-108B	Approaches to Anheung Hang	No. 2 Firing Range—An area bound by the following points: a. 36˚40'46.3"N, 126˚09'16.7"E. b. 36˚40'36.3"N, 126˚12'58.7"E. c. 36˚29'25.4"N, 126˚15'01.7"E. d. 36˚28'10.4"N, 126˚07'28.7"E.

South Korea Firing Areas			
Controlling Authority	**Area**	**Location**	**Limits**
Agency for Development	R-108C	West of Gunsan Hang	No. 3 Firing Range—An area bound by the following points: a. 36˚40'38.3"N, 126˚10'23.7"E. b. 36˚34'10.4"N, 126˚17'52.6"E. c. 34˚58'24.1"N, 126˚03'07.9"E. d. 35˚01'19.0"N, 125˚42'50.0"E. e. 36˚38'10.3"N, 125˚59'52.8"E.
	R-108D	Approaches to Anheung Hang	No. 4 Firing Range—An area bound by the following points: a. 36˚40'46.3"N, 126˚09'16.7"E. b. 36˚40'36.3"N, 126˚11'52.7"E. c. 36˚21'40.5"N, 126˚09'07.7"E. d. 36˚23'10.5"N, 126˚00'22.8"E.
	R-108E	Approaches to Anheung Hang	No. 5 Firing Range.—An area bound by the following points: a. 36˚40'39.3"N, 126˚10'03.7"E. b. 36˚41'11.3"N, 126˚11'59.7"E. c. 36˚36'57.4"N, 126˚15'54.7"E. d. 36˚33'36.4"N, 126˚15'54.7"E. e. 36˚33'34.4"N, 126˚13'42.7"E.
	R-108F	Approaches to Anheung Han	No. 6 Firing Range.—An area bound by the following points: a. 36˚40'46.3"N, 126˚09'16.7"E. b. 36˚40'36.3"N, 126˚11'52.7"E. c. 36˚17'19.5"N, 126˚00'32.8"E. d. 36˚18'10.5"N, 125˚56'37.8"E.
	R-108G	Approaches to Anheung Han	No. 7 Firing Range.—An area bound by the following points: a. 36˚40'38.4"N, 126˚10'23.7"E. b. 36˚41'11.4"N, 126˚11'59.7"E. c. 36˚36'57.4"N, 126˚15'54.7"E. d. 36˚34'10.4"N, 126˚17'52.6"E. e. 35˚55'17.7"N, 126˚12'32.7"E. f. 34˚08'58.4"N, 125˚40'59.9"E. g. 33˚44'00.6"N, 125˚47'03.9"E. h. 33˚52'10.5"N, 125˚03'38.1"E. i. 34˚12'51.4"N, 125˚23'30.0"E. j. 36˚38'35.4"N, 126˚05'24.7"E.
National Maritime Police	Mokpo Entrance	Approaches to Bulmugido	An area, 5 miles in radius, centered on position 34˚45'34.2"N, 126˚13'23.8"E.
	Mokpo L	Southwest of Daeheuk-sando	An area, 4 miles in radius, centered on position 34˚33'11.2"N, 125˚20'53.2"E.
	Mokpo Yeong-ewang	Northwest of Beopseongpo	An area, 3 miles in radius, centered on position 35˚24'10.9"N, 126˚14'52.8"E.
	Mokpo Uido	South of Uido	An area, 4 miles in radius, centered on position 34˚25'11.3"N, 125˚54'53.0"E.
	Gunsan	Southeast of Eocheongdo	An area, 5 miles in radius, centered on position 35˚51'40.7"N, 126˚10'07.8"E.
	Taean	South of Anheung Hang	An area, 5 miles in radius, centered on position 36˚28'55.4"N, 126˚04'22.7"E.

South Korea Firing Areas			
Controlling Authority	**Area**	**Location**	**Limits**
National Maritime Police	Incheon	Southwest of Deokjeokdo	An area, 4 miles in radius, centered on position 37˚04'10.2"N, 126˚04'52.7"E.

Appendix II

KOSREP Message Reporting Formats					
Format	**Sailing Plan**	**Position Report**	**Deviation Report**	**Final Report**	**Remarks**
A/Vessel name/call sign//	R	R	R	R	
B/Date and time of departure or report//	R	R	O		See Note 1.
C/Latitude/longitude//	R	R			See Note 2.
E/Current course//	O	O	O		
F/Intended average speed//	O	O	O		See Note 3.
G/Port of departure/latitude/longitude//			O		See Note 2.
I/Port of destination/latitude/longitude//	R		O		See Note 2.
K/Port of arrival/latitude/longitude/time of arrival//				R	See Notes 1 and 2.
L/Navigation method/average speed/latitude/ longitude/ETA/name of landmark or sea area//	R		O		See Notes 1, 2, 4, 5, and 6.
M/Current coastal radio station/next coastal radio station, if any//	O	O	O		
V/Onboard medical resources//	R		O		See Note 7.
X/Up to 65 characters of amplifying comments//	O	O	O	O	
Y/JASREP/AMVER/others//	R	R	R	R	See Note 8.

KEY

R Required
O Optional

Notes:

1. Expressed as a six-digit group, DDHHMM, using UTC, where DD is the date (from 01 to 31), HH is the hour (from 00 to 23) and MM is minutes (from 00 to 59), followed by Z.
2. Latitude is expressed as a four-digit group, DDMM, where DD is degrees (from 00 to 90) and MM is minutes (from 00 to 59), followed by N or S.
3. Average speed is a three-digit group expressed in terms of knots and tenths of knots.
4. Requires at least three waypoints, up to a maximum of 12.
5. For navigation method, use “Coastal” for coastal navigation, “RL” for rhumb line, and “GC” for great circle.
6. Average speed to next waypoint is a three-digit group expressed in terms of knots and tenths of knots.
7. Choose from “MD” for physician, “PA” for physician’s assistant or health supervisor, “NURSE,” or “NONE.”
8. Used when a dual participation in KOSREP, JASREP, AMVER, or other system is desired.

TAIWAN

General

Taiwan (Republic of China) is located in the E part of Asia bordering the East China Sea, Philippine Sea, South China Sea, and Taiwan Strait, N of the Philippines, off the SE coast of China. It occupies the island of Taiwan and the adjoining islands of P'eng-hu Lieh-tao.

It also includes a number of small islands of which Chin-men Tao is the largest and best known. Taiwan is separated from the mainland by the Taiwan Strait.

The climate is subtropical in the N and tropical in the S. The typhoon season extends from July to September.

The terrain in the E part of the country is mostly rugged mountains. The W consists of flat to gently rolling plains.

On the E coast the mountains reach the very edge of the sea making good harbors nonexistent.

Many rivers originate in the mountains but their courses are short and rapid.

The only river of importance to navigation is the lower part of the Tan-shui Ho.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information. Caution is advised as previous non-IALA buoyage may still exist.

Currency

The official unit of currency is the New Taiwan dollar, consisting of 100 cents.

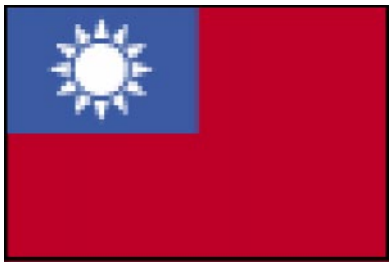
Government

Taiwan is a multiparty democracy. The country is divided into two provinces

Taiwan is governed by a directly-elected President serving a 4-year term. The Premier is appointed by the President. The unicameral 225-members Legislative Yuan is composed of 176 directly-elected members and 49 members elected by proportional representation.

The legal system is based on civil law.

The capital is Taipei.



Flag of Taiwan

Holidays

The following holidays are observed:

January 1-2	New Year's Days
January 3	Bank Holiday
Chinese New Years (3 days)	Variable
Ching Ming (Tomb Sweeping Day)	Variable
March 29	Youth Day
Dragonboat Festival	Variable
July 1	Bank Holiday
Autumn Festival	Variable
September 28	Teachers' Day/Birthday of Confucius
October 10	National Day (Double Tenth Day)
October 25	Taiwan Retrocession Day
October 31	Chiang Kai-shek Day
November 12	Sun Yat-Sen Day

Industries

The main industries are based on electronic, textiles, chemicals, clothing, food processing, plywood, sugar milling, cement, shipbuilding, and petroleum refining.

Major exports are sugar, textiles, manufactured goods, metals, lumber and plywood.

Imports are machinery and manufactured goods, petroleum, chemical fertilizer, cotton, food grains, vehicles, and pharmaceuticals.

Languages

Mandarin Chinese is the official language. Other languages spoken are Taiwanese, a form of southern Chinese dialects; Japanese; and some English.

Navigational Information

Enroute Volumes

Pub. 157, Sailing Directions (Enroute) Coasts of Korea and China.

Maritime Claims

The maritime territorial claims of Taiwan are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles
Fisheries or Economic Zone	200 miles.

* Claims straight baselines.

Maritime Boundary Disputes

Involved in a complex dispute with Vietnam, China, the Philippines, Malaysia, and possibly Brunei over the Spratly Islands (8˚38'N., 111˚55'E.). The 2002-issued *Declaration on the Conduct of Parties in the South China Sea* has eased tensions but falls short of a legally-binding code of conduct desired by several of the disputants.

Claims the Japanese-administered Senkaku Islands (Diaoyu Tai) (25˚50'N., 124˚05'E.).

Claims the Paracel Islands (16˚40'N., 112˚20'E.), which are currently occupied by China and also claimed by Vietnam.

Pilotage

Pilotage is compulsory for all vessels, including warships, at all ports in Taiwan. Pilots are available upon request to the harbormaster

Vessels calling at Taiwan ports should inform harbor authorities 24 hours before arrival, via Chi-lung Coast Radio Station, giving the following information:

1. Vessel name.
2. Nationality.
3. ETA.
4. Draft.
5. Description of cargo and passenger.

Regulations

Vessels in distress seeking refuge in the ports of Taiwan are subject to several regulations.

Any foreign vessel which must enter a port in Taiwan due to a disaster, or for the purpose of refuge must first inform the Harbor Office, according to the formal procedure, for permission to enter the outer harbor and anchor at a designated spot pending inspection, if such vessel is still able to sail and communicate.

Upon receipt of a request from the above foreign vessel, either in distress or permission to enter for refuge, the Harbor Office will reply to the vessel granting permission and at the same time notify the Joint Inspection Office (Immigration Office), Customs Office, and Quarantine Office to dispatch officers to inspect the vessel.

If the vessel in distress is unable to sail or communicate, or communications break down after the distress signal is sent, the Harbor Office should upon receipt of the signal, take immediate steps to effect the vessel's rescue, enlisting the assistance of the Navy if necessary, and at the same time inform the authorities concerned to prepare for the usual procedure.

Vessels in distress or seeking refuge shall not be permitted to enter if found, after inspection, to be in any of the following conditions:

1. Loaded with dangerous cargo.
2. Affected by an epidemic of acute contagious diseases.
3. Showing no evidence of distress nor any need for refuge and warranting no necessity of entry.

Regarding conditions (1) and (2), if the vessel is in great and urgent distress, immediate steps should be taken to rescue the passenger and crew members but the vessel shall not be permitted to enter.

Harbor Management Regulations

Extracts from the Taiwan Provincial Government Regulations are listed below:

Article 1.—The Taiwan Provincial Government, hereinafter called this government, has enacted these regulations for the purpose of managing port administrations, calling or leaving vessels, operations on the land or in the water and port facilities as well as maintaining the order and safety in the harbor area.

Article 2.—In accordance with Article 1 of the Commercial Harbor Statute Promulgated by the Central Government, the commercial harbors in Taiwan designated by the Executive Yuan are, as follows:

1. Keelung Harbor (including Suao Harbor).
2. Kaohsiung Harbor.
3. Hualian Harbor.

Article 3.—The harbor bureaus under Provincial Communications Department are the supervisory authorities of all commercial harbors.

Article 4.—The vessel, harbor area, and dangerous article called in these regulations are defined, as follows:

1. Vessel—All types of vessels which are navigable in or under the water.
2. Harbor area—Both land and water area within the harbor limit. The area will be surveyed and delimited by this government and further designated by the Ministry of Communications in accordance with Article 2 of the Commercial Harbor Statute.
3. Dangerous article—Denoting explosives, gases compressed into a liquid or melted form, combustible liquid or solid, oxidizers, poisonous or contagious materials, radioactive materials, corrosive materials, and others. The breakdown of dangerous articles will be designated by the Ministry of Communications.

Article 5.—The boundary lines for jurisdictions of Keelung, Kaohsiung and Hualian Harbor Bureau are indicated below:

1. On the W coast, the mouth of Cho Shui River at 23˚50'N is the divider, N of which Keelung Harbor Bureau has jurisdiction; S of which (including P'eng-hu island groups) Kaohsiung Harbor Bureau has jurisdiction.
2. On the E coast, the mouth of Ho Ping River at 24˚18'40"N is the divider, N of which Keelung has jurisdiction; S of which (including Lu Island and Orchid Island) Hualian Harbor Bureau has jurisdiction.
3. On the S coast drawing a vertical line extending from N to S at O-Luan-Pi at 21˚54'15"N, 120˚50'45"E, E of which Hualian Harbor Bureau has jurisdiction; W of which Kaohsiung Harbor Bureau has jurisdiction.

Article 6.—A 24-hour advance notice should be given to the harbor bureau by the calling vessel by means of radio or by the shipping company or agent concerning the vessel's scheduled arrival time, draught, kinds of cargo and passengers if any.

The shipping company or agent has to clear the entry or clearance procedures for the vessel calling or leaving the harbor with the government agencies concerned. The difference between the scheduled and actual arrival time must not exceed 12 hours; however, the Harbor Controlling Regulations in Taiwan will apply to the vessel on emergency leave or entry.

Fishing boats do not have to report the scheduled arrival time to the harbor bureau if they do not use the berths outside the designated berthing area.

Article 7.—Calling vessels must anchor at the anchorage to wait for quarantine and inspections regardless of arrival in the daytime or at night. Their anchoring location shall not interfere with the public fairway.

When the signal is given as to the berth and permission, the ship shall then hoist the same signal in response to the notification.

Article 8.—Vessels entering or leaving the harbor shall hoist the Chinese National flag, country-registered national flag, ship's flag, and the berthing signal flag.

Article 9.—In case a vessel comes into a harbor to avoid danger or goes out and comes back within 12 hours for some reason, a written report is required instead of an entry report if approved to enter by the harbor bureau.

Article 10.—While in the harbor, vessels must not proceed abreast or overtake.

They shall observe the International Rules of the Road and also must slow down as much as possible and sometimes must go very slowly when other vessels are used for diving, surveying, dredging, repairing floating marks, or something else in the harbor.

Article 11.—The leaving vessel, after being inspected, shall not dock at a wharf again or stay in the harbor.

No crew members of the vessel, which has been permitted to enter and dock due to a disaster or for refuge purpose, may go ashore unless under special circumstances and with the authorization of the Immigration Office. The radio station on board the vessel shall be sealed and suspended from operation immediately upon entry into port of the vessel.

Vessels permitted to enter the port, due to a disaster or for the purpose of taking refuge, should, in accordance with the regu-

lar procedures, apply to the Harbor Office for permission to leave the port as soon as the disaster is over. When permission is granted, the vessel may leave the harbor under the supervision of a representative of the Immigration Office who will break the seal suspending the operation of the vessel's radio station.

Search and Rescue

A network of coast radio stations maintains a continuous listening watch on international distress frequencies.

Signals

Typhoon Signals

Typhoon signals for Taiwan are given in the accompanying table.

Typhoon Signals		
Day	**Night**	**Meaning**
Two yellow flags in a hoist	Two green lights in a hoist	Typhoon at sea
Three yellow flags in a hoist	Three green lights in a hoist	Typhoon ashore

Storm Signals

Storm signals for Taiwan are given in the accompanying table.

Storm Signals		
Day	**Night**	**Meaning**
One black ball	One white light over one red light	Winds of force 6 to 7
One black triangle, point up	One green light over one red light	Winds from NW of force 8 or greater
One black triangle, point down	Two white lights in a hoist	Winds from SW of force 8 or greater
Two black triangles, points up, vertically disposed	One red light over one white light	Winds from NE of force 8 or greater
Two black triangles, points down, vertically disposed	One white light over one red light	Winds from SE of force 8 or greater
One flag (white with black border)	No signal	Winds variable and veering
Two flags (white with black border)	No signal	Winds variable and backing
One black cross	One green light between two red lights, vertically disposed	Typhoon

Traffic Signals

Traffic signals for Taiwan are given in the accompanying table.

Traffic Signals		
Day	**Night**	**Meaning**
Two pairs of shapes, each consisting of one triangle over one ball, vertically disposed	One red light over one green light	Entry permitted
One black ball	One red light between two green lights, vertically disposed	Departures permitted
Three balls, vertically disposed	Three red lights, vertically disposed	Port closed
One triangle over one ball, between two red balls, vertically disposed	Two pairs of lights, each consisting of one red light over one green light, vertically disposed	Emergency control in force

Time Zone

The Time Zone description is HOTEL (-8). Daylight Savings Time is not observed.

Traffic Separation Schemes

Traffic Separation Schemes (TSS) in Taiwan are, as follows:

1. Tai-chung.
2. Chi-lung.
3. Approaches to Kao-hsiung. (Kao-hsiung Harbor Bureau)

U.S. Embassy

The U.S. maintains no diplomatic relations with Taiwan. Unofficial commercial and other relations with Taiwan are maintained through a private organization, the American Institute in Taiwan, which has offices in Taipei and Kaohsiung.

THAILAND

General

Thailand is located in Southeastern Asia, bordering the Andaman Sea and the Gulf of Thailand.

The climate is tropical. Rainy, cloudy, and warm Southwest Monsoons occur from the middle of May to September. Cool Northeast Monsoons occur from November to the middle of March. The isthmus at the S end is always hot and humid.

The terrain is Kharst plateau in the E, with mountains elsewhere.

Buoyage System

The IALA Buoyage System (Region A) is in effect, although some beacons and buoys which do not conform to this system continue to exist. See Chart No. 1 for further IALA Buoyage System Information.

Cautions

Floating or fixed drill rigs may be encountered in the Gulf of Thailand. Buoys associated with the drilling operations are frequently moored in the vicinity of these structures. The positions of these rigs and buoys are frequently changed and are generally promulgated by radio navigational warnings.

Currency

The official unit of currency is the baht, consisting of 100 satang.

Government

Flag of Thailand

Thailand is a constitutional monarchy. The country is divided into 76 provinces.

Thailand is governed by a King. The Prime Minister is appointed by the King. The bicameral National Assembly consists of a directly-elected 200-member Senate and a directly-elected 500-member House of Representatives serving 4-year terms.

The legal system is based on civil law, with influences of common law.

The capital is Bangkok.

Holidays

The following holidays are observed:

January 1	New Year's Day
May 1	Labor Day
May 5	Coronation Day
July 1	Mid-year Day
August 12	The Queen's Birthday
December 5	The King's Birthday
December 10	Constitution Day
December 31	New Year's Eve

Other holidays, which vary from year to year depending on the appearance of the moon, are Magha Puja Day, Chakri Day, Songkran Day, Nao Day, Taleung Sok, Visakha Bucha Day, Kao Pansa Day, and Chulalongkorn Day.

Industries

The major industries include agricultural processing, textiles, cement, wood products, tin and tungsten ore mining, tourism, and light manufacturing (jewelry, appliances, integrated circuits, and plastics).

The principal crops include rice, maize, sugarcane, tobacco, tapioca root, soybeans, rubber, opium, and cotton. Teak, yang, and other woods, and charcoal are the main forestry products.

Languages

Thai is the official language. There are also several ethnic and regional dialects. English is used widely by the elite and in commerce.

Mined Areas

An Ban Don

The area enclosed by the parallel of 9˚23'N, the meridian of 99˚45'E, and the shore is open to surface navigation only. The area is still dangerous for anchoring and fishing.

Ao Chumphon

The waters within an area centered on Ko Mattaphon Light (10˚27'N., 99˚15'E.) having a radius of 13 miles are open to surface navigation only. The area is still dangerous for anchoring and fishing.

Prachuap Khiri Khan

The area enclosed by the parallels of 11˚41'N and 11˚50'N, and the meridians of 99˚49'E and 99˚52'E, is open to surface navigation only. The area is still dangerous for anchoring and fishing.

Krung Thep

The following areas in the approaches to Krung Thep (Bangkok) are considered dangerous due to bottom mines:

1. Hua Hin.—The area within a circle of radius 1 mile centered in position 12˚31'18"N, 100˚00'00"E is open to surface navigation only. The area is still dangerous for anchoring and fishing.
2. Laem Phak Bia.—The area within a circle of radius 6 miles centered in position 13˚00'00"N, 100˚19'00"E is open to surface navigation only. The area is still dangerous for anchoring and fishing.
3. Mae Nam Mae Khlong.—The area within a circle of radius 1 mile centered in position 13˚16'30"N, 100˚00'48"E is open to surface navigation only. The area is still dangerous for anchoring and fishing.
4. Mae Nam Tha Chin.—The area within a circle of radius 1 mile centered in position 13˚26'00"N, 100˚19'00"E is open to surface navigation only. The area is still dangerous for anchoring and fishing.
5. Mae Nam Tha Chin.—The area within a circle of radius 1.5 miles centered in position 13˚20'48"N, 100˚25'00"E is open to surface navigation only. The area is still dangerous for anchoring and fishing.

6. Ko Rin.—The area within a circle of radius 4 miles centered in position 12˚49'00"N, 100˚43'00"E is open to surface navigation only. The area is still dangerous for anchoring and fishing.

7. Ko Khram.—The area within a circle of radius 5 miles centered in position 12˚34'00"N, 100˚45'18"E is open to surface navigation only. The area is still dangerous for anchoring and fishing.

Ko Si Chang

The waters in depths of less than 5.5m around Ko Si Chang are open to surface navigation. The area is still dangerous for anchoring and fishing.

Ko Si Chang anchorage is used on a year round basis. It is normally approached from the N.

Laem Sommuk has anchorage for small vessels in the event that there would be adverse conditions at Ko Si Chang.

Ko Chang Approaches

The area bound by the parallels of 11˚51'N and 11˚54'N, and by the meridians of 102˚24'E and 102˚32'E, is open to surface navigation only. The area is still dangerous for anchoring and fishing.

Navigational Information

Enroute Volumes

Pub. 161, Sailing Directions (Enroute) South China Sea and Gulf of Thailand.

Pub. 174, Sailing Directions (Enroute) Strait of Malacca and Sumatera.

Maritime Claims

The maritime territorial claims of Thailand are, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.

* Claims straight baselines. Claims the inner Gulf of Thailand to 12˚35'45"N as a historical bay.

Maritime Boundary Disputes

A short section of the maritime boundary with Malaysia at the mouth of the Sungai Kolok (6˚15'N., 102˚05'E.) remains in dispute.

Regulations

The laws relating to the production, possession, distribution, and use of narcotic drugs are extremely severe in Thailand. Penalties for infringement range from prison sentences and fines to life imprisonment and even execution.

Crew members, when on shore leave, must not carry sheath knives or other dangerous weapons.

Search and Rescue

Search and rescue operations in Thailand are coordinated by the Department of Aviation at Krung Thep (Bangkok) Rescue Coordination Center with the Royal Thai Navy, the Thai Marine Police Division, and the Harbor Department. A network of coast radio stations maintains a continuous listening watch on international distress frequencies.

Signals

General

Thailand requires that vessels preparing to leave port or Thai waters shall fly the International Code flag "P" indicating that the vessel is about to proceed to sea. If the vessel is to depart in the morning, this flag is to be flown in the afternoon of the previous day. If departure is in the afternoon, the flag is to be flown in the morning.

The vessel shall notify the harbormaster at least 6 hours before the expected time of departure.

Within Thai territorial waters, merchant vessels may be signaled by Thai naval craft to stop, or to proceed in a certain direction, for the purpose of a search, as follows:

1. By day, signals from the International Code will be used by naval patrol craft. By night, repeated short and long flashes will be made by naval patrol craft, or a rocket, from which a red flare is ejected, will be fired. Vessels that do not stop in answer to these signals will be fired on.

2. Thai naval aircraft will make the appropriate signal from the International Code. They will fly low round the vessel and then proceed towards a certain direction indicating that the vessel must proceed in that direction. Vessels ignoring this signal will be warned by a burst of machine-gun fire directed ahead of the vessel.

Storm Signals

Signals indicating the presence of storms in the Gulf of Thailand and adjacent waters and their intensity are displayed at Bangkok. These signals, consisting of a pennant and a flag are hoisted on the same yardarm; the pennant is displayed above the flag. The pennant indicated the intensity of the storm while the flag indicated the location. The signals are, as follows:

1. Yellow pennant—Tropical depression or storm with winds near the center not exceeding 33 knots

2. Blue pennant—Tropical depression or storm with winds near the center between 34 and 63 knots.

3. Red pennant—Tropical depression or storm with winds near the center exceeding 64 knots

4. Yellow flag—Area 1—West coast of the Gulf of Thailand to latitude 5˚N and longitude 105˚E.

5. Blue flag—Area 2—West coast of the Gulf of Thailand to latitude 5˚N.

6. Red flag—Area 3—The Andaman Sea.

7. Blue flag with yellow square center—Area 4—The South China Sea in an area bound by lines joining the following positions:

   a. 5˚00'N, 105˚00'E.
   b. 12˚00'N, 105˚00'E.
   c. 12˚00'N, 112˚00'E.
   d. 5˚00'N, 112˚00'E.

Submarine Signals

Thai vessels display a red triangular flag when submarines, either surfaced or submerged, are in the vicinity.

Time Zone

The Time Zone description is GOLF (-7). Daylight Savings Time is not observed.

Traffic Separation Schemes

A Traffic Separation Scheme (TSS), which has not been adopted by the IMO, has been established within the Si Racha Pilotage District between the coast and Ko Si Chang.

U.S. Embassy

The U.S. Embassy is situated at 120/22 Wireless Road, Bangkok 10330.

The mailing address is APO AP 96546.

U. S. Embassy Thailand Home Page
http://bangkok.usembassy.gov

TOKELAU

General

Tokelau, a New Zealand dependency formerly part of the Gilbert and Ellice Island Colony, is composed of the three small atolls of Atafu, Nukunonu, and Fakaofo.

They are located in the South Pacific Ocean about 250 miles N of Samoa between latitude 8˚S and 10˚S, and longitude 171˚W and 173˚W. These atolls are composed of a number of coral islets surrounding a central lagoon into which there are no passages. The atolls are 3 to 5m above sea level. There are no ports in Tokelau.

The climate is tropical. It is moderated by trade winds which run from April to November.

The terrain consists of coral atolls that are enclosing large lagoons.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

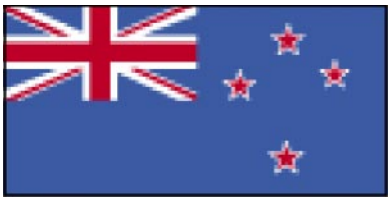
Cautions

Fish aggregation devices/wave rider buoys are located 0.4 to 0.5 mile W of each atoll. These catamaran-type devices are constructed of aluminum and are fitted with radar reflectors.

Currency

The official unit of currency is the New Zealand dollar, consisting of 100 cents.

Government



Flag of Tokelau

Tokelau is a self-administering territory of New Zealand. It is in the process of drafting a constitution and developing institutions for a free association with New Zealand.

The chief of state is Queen Elizabeth II of the United Kingdom. The New Zealand Minister of Foreign Affairs appoints the Administrator. The head of government is chosen from Council of Faipule, consisting of the elected head from

each of the three atolls, and serves a 1-year term. The unicameral 48-member General Fono consists of 15 directly-elected members from each atoll plus the village mayor of each atoll; all members serve a 3-year term.

The legal system is based on New Zealand law and local statutes.

There is no capital; each atoll has its own administrative center.

Holidays

The following holidays are observed:

January 1	New Year's Day
February 6	Waitangi Day
Good Friday	Variable
Easter Sunday	Variable
April 25	Anzac Day
First Monday in June	Queen's Birthday
Fourth Monday in October	Labor Day
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are based on copra production, wood work, stamps, coins, and fishing.

Languages

English is the official language. The indigenous language of Tokelau has linguistic links with Samoan.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Tokelau, as follows:

Territorial Sea *	12 miles.
Fisheries or Economic Zone	200 miles.

* Prohibits entry of nuclear-powered ships or ships carrying nuclear material.

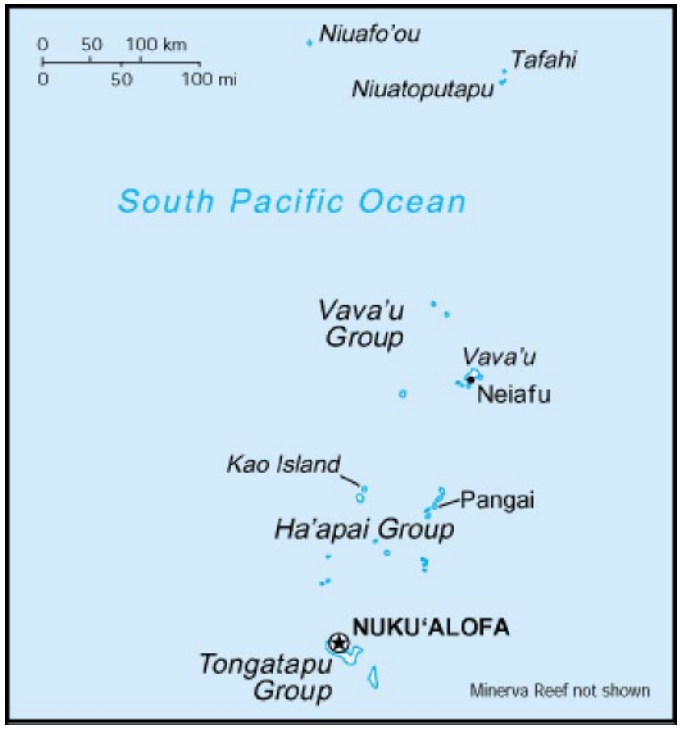
Time Zone

The Time Zone description is XRAY (+11). Daylight Savings Time is not observed.

U.S. Embassy

There are no U.S. diplomatic offices.

TONGA



General

Tonga, a member of the British Commonwealth, consists of about 150 islands and islets located in the South Pacific Ocean between 15˚S and 23˚30'S, and 173˚W and 177˚W.

The three main island groups, both from a historical and administrative standpoint, are Vava'u in the N, Ha'apai in the center, and Tongatapu in the S.

The climate is tropical and modified by trade winds. The warm season is from December to May and the cool season is from May to December.

The terrain of most islands is a limestone base from uplifted coral formations. The other islands have limestone overlaying a volcanic base.

The islands to the E, being mostly of limestone formation, are low-lying and, with but a few exceptions, seldom exceed 30m above sea level.

The islands to the W are of a volcanic nature and average between 106 and 1,046m high. Kao. the highest point in the group, is an extinct volcano 1,125m high.

The Tongatapu group contains seven major islands, the largest of which is Tongatapu, a coral island on which Nuku' alofa, the capital and chief port, is situated. Approximately one-half of the kingdom's entire population live on this low-lying island.

The Ha'apai group is a cluster of 36 islands of mixed form, only 20 of which are permanently inhabited. The largest of the group is Togua, an active volcano whose crater contains a steaming lake.

The Vava'u group consists of 34 islands. The island of Vava'u is the largest of the Vava'u group and is famous for its harbor. Fourteen of the other islands are uninhabited.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

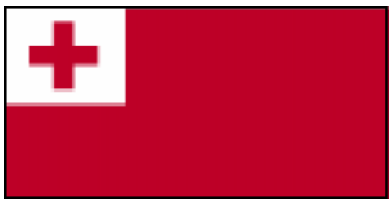
Swells from the SW cause heavy surf on the S coasts of the islands.

Volcanic activity can occur in the area NW and SW of Tongatapu. Caution is necessary in these areas; a good lookout should be kept for new shoals.

Currency

The official unit of currency is the Tongan dollar, called a pa'anga, consisting of 100 seniti.

Government



Flag of Tonga

Tonga is a hereditary constitutional monarchy. The country is divided into three island groups.

Tonga is governed by a King, who appoints the Prime Minister and the 12-member Cabinet. The unicameral Legislative Assembly consists of 30 members, all serving 3-year terms, as follows:

a. 12 seats—reserved for Cabinet members.
b. 9 seats—selected from the country's 33 nobles.
c. 9 seats—directly elected.

The legal system is based on English common law.

The capital is Nukualga, on Tongatapu.

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Monday	Variable
April 25	Anzac Day
May 4	Birthday of Crown Prince
June 4	Emancipation Day
July 4	Birthday of King Tauga'ahau Tupou IV
November 4	Constitution Day
July 7	Independence Day
December 4	Birthday of King Tupou I
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are tourism and fishing. Production of copra and bananas provides the basis of the Tongan economy.

Other crops produced for export include watermelons, tomatoes, kava root, capsicum, and vanilla beans. Pigs are probably the most important livestock in Tonga.

There are several small industries manufacturing such products as plastic pipes, charcoal, corrugated iron, and handicrafts.

Languages

Tongan, a Polynesian dialect, is the indigenous language but most people also speak English.

Mined Areas

Within Tonga, all known mine fields in the approaches to Tongatapu have been swept. Ships should not anchor, nor submarines bottom, within the areas bound by lines joining the following positions:

1a. 21˚01'30"S, 175˚15'00"W.
1b. 21˚01'30"S, 175˚18'35"W.
1c. 21˚03'20"S, 175˚17'55"W.
1d. 21˚02'23"S, 175˚15'00"W.

2a. 20˚59'00"S, 175˚10'30"W.
2b. 20˚59'00"S, 175˚14'30"W.
2c. 21˚01'30"S, 175˚14'30"W.
2d. 21˚01'30"S, 175˚10'30"W.

3a. 21˚00'00"S, 175˚07'00"W.
3b. 21˚00'00"S, 175˚10'30"W.
3c. 21˚03'45"S, 175˚10'30"W.
3d. 21˚03'45"S, 175˚07'00"W.

4a. 21˚05'00"S, 175˚13'49"W.
4b. 21˚05'00"S, 175˚14'25"W.
4c. 21˚05'50"S, 175˚14'25"W.
4d. 21˚05'50"S, 175˚13'49"W.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Tonga are, as follows:

Territorial Sea	12 miles.
Fisheries or Economic Zone	200 miles.

Continental Shelf	Depth of 200m or the Limit of Exploitation.

Search and Rescue

Search and rescue operations are coordinated by RCC Tonga Defence Services and ARCC Fua'amotu International Airport.

Nukualofa Coast Radio Station (A3A) maintains a continuous listening watch on 2182 kHz for distress traffic.

Time Zone

The Time Zone description 13 hours fast of GMT. Daylight Savings Time is not observed.

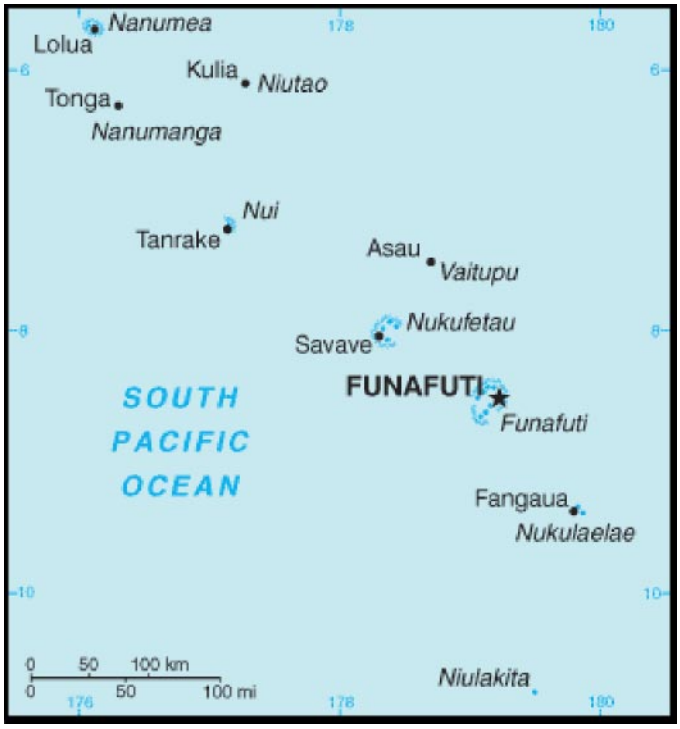
U.S. Embassy

The ambassador to Fiji is accredited to Tonga.

The mailing address is 31 Loltus Street, P.O. Box 218, Suva, Fiji.

U. S. Embassy Fiji Home Page
http://suva.usembassy.gov

TUVALU



General

Tuvalu, an island group consisting of nine coral atolls, is an independent nation within the British Commonwealth. Only eight of the low-lying atolls, or coral islands, are permanently inhabited.

Tuvalu is located in the South Pacific Ocean between 5˚S and 10˚S, and 176˚E and 180˚E. The islands are Nanumea, Nanumanga, Niutao, Nui, Vaitupu, Nukufetau, Funafuti, Nukulaelae, and Niulakita.

Nanumanga and Niulakita are atolls consisting of solid masses of limestone with fringing reefs. The latter is regarded as part of Niutao. The islands extend for a distance of 360 miles in a NW to SE direction and cover an area of about half a million square miles of ocean. The administrative center is situated at Fongafale on the largest and easternmost islet of the atoll. The airstrip is also situated on that islet. The atoll is the only reported port of entry for Tuvalu.

The climate is tropical and moderated by East Trade Winds, which run from March to November. There are W gales and heavy rains from November to March.

The terrain is low-lying, with many narrow coral atolls.

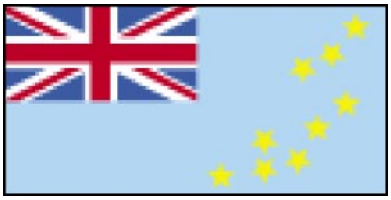
Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the Australian dollar, consisting of 100 cents.

Government



Flag of Tuvalu

Tuvalu is a constitutional monarchy with a parliamentary democracy. Queen Elizabeth II is recognized as the Chief of

State and is represented by a Governor General, who is appointed based on the recommendation of the Prime Minister.

Tuvalu is governed by a Prime Minister elected by and from the members of the House of Assembly. The unicameral House of Assembly consists of 15 directly-elected members serving 4-year terms.

The capital is Funafuti.

Holidays

The following holidays are observed:

January 1	New Year's Day
Second Monday in March	Commonwealth Day
Good Friday	Variable
Holy Saturday	Variable
Easter Sunday	Variable
Easter Monday	Variable
May 13	Gospel Day
Second Saturday in June	Queen's Birthday
August 5	Children's Day
October 1	Tuvalu Day
November 11	Prince Charles' Birthday
December 25	Christmas Day
December 26	Boxing Day

Industries

The main industries are fishing, tourism, and copra.

Languages

Tuvaluan and English are the official languages.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Tuvalu are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.

* Claims archipelagic status.

Regulations

Vessels bound for ports in Tuvalu may establish radio contact through Funafuti Island Coast Radio Station.

Search and Rescue

A search and rescue committee has been established. Funafuti Radio provides limited high frequency radiotelephone service to vessels and neighboring islands.

Time Zone

The Time Zone description is MIKE (-12). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. ambassador to Fiji is accredited to Tuvalu.

The mailing address is 31 Loltus Street, P.O. Box 218, Suva, Fiji.

U. S. Embassy Fiji Home Page
http://suva.usembassy.gov

VANUATU

General

Vanuatu, formerly the British and French Condominium of the New Hebrides, consists of more than 70 islands and islets in the South Pacific, lying between 12˚S and 21˚S, and 166˚E and 171˚E.

The larger islands of the group are Espiritu Santo, Malekula, Epi, Pentecost, Aoba, Maewa, Paama, Ambrym, Ejate, Erromanga, Tanna, and Aneityum.

The island chain stretches about 500 miles from the Torres Islands in the N to Aneityum in the S.

The climate is tropical and moderated by Southwest Trade Winds.

The terrain is mostly mountains of volcanic origin with narrow coastal plains.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Currency

The official unit of currency is the vatu, consisting of 100 centimes.

Government

Flag of Vanuatu

Vanuatu is a republic. The country is divided into six provinces.

Vanuatu is governed by a President elected by an Electoral College consisting of the members of Parliament and the Presidents of the Regional Councils to a 5-year term. The unicameral Parliament consists of 52 directly-elected members serving 4-year terms.

The legal system is based on a combination of British and French law.

The capital is Port-Vila.

Holidays

The following holidays are observed:

January 1	New Year's Day
March 5	Custom Chiefs' Day
Good Friday	Variable
Easter Sunday	Variable
Easter Monday	Variable
May 1	Labor Day
Ascension Day	Variable
July 24	Children's Day
July 30	Independence Day
August 15	Assumption Day
October 5	Constitution Day
November 29	Unity Day
December 25	Christmas Day
December 26	Boxing Day/Family Day

Industries

The main industries are food and fish freezing, wood processing, and meat canning.

The main commercial crops are copra, cocoa, coffee, some livestock, and fish production. Yams, taro, manioc, and bananas are grown for local consumption.

There is no heavy industry but there is increasing activity in light industry. Industries include a sawmill, a soft drink factory, meat canneries, a modern slaughterhouse, and a fish-freezing plant.

Major exports include copra, fish, manganese, and meat products. The principal imports include food, petroleum, machinery, and consumer goods.

Languages

English and French are the official languages. Bislama, the New Hebrides pidgin, is also spoken.

Mined Areas

Mine fields were laid in many parts of the world during World War II. Many of these mine fields have been swept; others had routes swept through them. These routes are mostly marked by buoys and have been used safely by shipping for many years.

Due to the lapse of time, navigation through these mine fields whether they have been swept or not is now considered no more dangerous from mines than from any other of the usual hazards, but in the unswept areas a real danger still exists with regard to anchoring, fishing, or any form of submarine or seabed activity. Furthermore, uncharted wrecks and shoals may lie in these areas.

The following areas are open to surface navigation:

1. Within Malo Island—an area bound by lines joining the following positions:
   a. 15˚36'28"S, 167˚06'30"E.
   b. 15˚36'28"S, 167˚04'15"E.

c. 15˚37'45"S, 167˚04'15"E.
d. 15˚37'45"S, 167˚06'30"E.

2. Within Benier Bay—an area bound by lines joining the following positions:
a. 15˚31'20"S, 167˚15'30"E.
b. 15˚31'45"S, 167˚12'45"E.
c. 15˚33'00"S, 167˚12'45"E.
d. 15˚33'00"S, 167˚15'30"E.

3. Within Scorff Passage—an area bound by lines joining the following points, with bearings and distances from the N extremity of Tutuba Island (15˚33'S., 167˚17'E.):

a.	281.0˚	1.38 miles
b.	326.0˚	2.41 miles
c.	347.5˚	2.05 miles
d.	078.5˚	1.52 miles
e.	124.5˚	1.35 miles
f.	333.0˚	0.22 mile

4. Within Undine Passage—an area bound by lines joining the following positions:
a. 15˚22'31"S, 167˚13'31"E.
b. 15˚22'06"S, 167˚14'57"E.
c. 15˚24'48"S, 167˚16'12"E.
d. 15˚25'48"S, 167˚14'37"E.

5. Within Undine Bay (17˚30'S, 168˚20'E).

Caution.—Vessels should not anchor nor submarines bottom in any of the above-described areas.

Navigational Information

Enroute Volume

Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims

The maritime territorial claims of Vanuatu are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* Claims archipelagic status.

Maritime Boundary Disputes

Claims Matthew Island (22˚21'S., 171˚21'E.) and Hunter Island (22˚24'S., 172˚05'E.).

Search and Rescue

Port-Villa Coast Radio Station (YJM) maintains a listening watch on 500 kHz, 2182 kHz, and VHF channel 16 for distress traffic, but the listening watch is not continuous. All distress alerts are relayed to RCC Nadi, Fiji.

Time Zone

The Time Zone description is LIMA (-11). Daylight Savings Time is not observed.

U.S. Embassy

The U.S. ambassador to Papua New Guinea is accredited to Vanuatu.

The mailing address is P.O. Box 1492, Port Moresby, Papua New Guinea.

U. S. Embassy Papua New Guinea Home Page
http://portmoresby.usembassy.gov

VIETNAM

General

Vietnam is located in Southeastern Asia, bordering the Gulf of Thailand, Gulf of Tonkin, and South China Sea, between China and Cambodia.

The climate is tropical in the S. There are monsoons in the N, with the hot rainy season lasting from the middle of May to the middle of September. The warm dry season is from the middle of October to the middle of March.

The terrain is low, with a flat delta in the S and N. The central highlands are reported hilly, with mountains in the far N and NW.

Buoyage System

The IALA Buoyage System (Region A) is in effect although caution is necessary as the conversion may not be complete. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Fishing stakes are frequently found as much as 30 miles off the coast of Vietnam. They consist of several long bamboo poles anchored by large stones and carrying a flag. A sampan is usually attached to them; vessels should not pass between the sampan and the bamboo.

Floating or fixed drill rigs may be encountered off the SE coast of Vietnam. Buoys associated with the drilling operations are frequently moored in the vicinity of these structures. The positions of these rigs and buoys are frequently changed and are generally promulgated by radio navigational warnings.

Currency

The unit of currency is the 1 new dong, consisting of 100 xu.

Government

Flag of Vietnam

Vietnam is a communist state. The country is composed of 60 provinces and one city.

Vietnam is governed by a President, elected from the members of the National Assembly, serving a 5-year term. The Prime Minister is appointed by the President from the members of the National Assembly. The unicameral National Assembly consists of 498 directly-elected members, all of whom are approved by the Communist Party of Vietnam, serving 5-year terms.

The legal system is based on French civil law and communist legal theory.

The capital is Hanoi.

Holidays

The following holidays are observed:

January 1	New Year's Day
Chinese New Year	Variable (3 days)
February 3	Communist Party Foundation Day
April 30	Victory Day
May 1	Labor Day
May 19	Ho Chi Minh's Birthday
May 28	Buddha's Enlightenment
September 2	Independence Day
September 3	Anniversary of the Death of Ho Chi Minh

Industries

The main industries are based on food processing, textiles, machine building, mining, cement, chemical fertilizer, glass tires, and oil.

Languages

Vietnamese is the official language. Various dialects may be encountered in the N part of the country. French, English, Chinese, and Khmer are also spoken by a considerable portion of the populace.

Mined Areas

The following areas have been declared dangerous due to mines laid during hostilities in Vietnamese waters:

1. **Mui Ke Ga.—**The area bound by the parallels of 10˚30'N and 10˚40'N, between the meridians of 107˚58'E and 108˚05'E, is safe for surface navigation only. Anchoring, dredging, cable laying, trawling and submarine bottoming should be avoided.
2. **Dao Phu Qui.—**The area bound by the parallels of 10˚23'N and 10˚29'N, between the meridians of 108˚55'E and 109˚00'E, is dangerous due to mines.
3. **Mui Ba Kiem.—**The area bound by the parallels of 10˚10'N and 10˚20'N, between the meridians of 107˚45'E and 107˚55'E, is safe for surface navigation only. Anchoring, dredging, cable laying, trawling, and submarine bottoming should be avoided.
4. **Cu Lao Xanh.—**The area bound by the parallels of 13˚34'N and 13˚39'N, between the meridians of 109˚16.5'E and 109˚21.4'E, is dangerous due to mines.
5. The waters in and around the entrances to the following ports are reported to be mined:

a. Haiphong (20˚51'N., 106˚37'E.).
b. Hon Gay (20˚56'N., 107˚03'E.).
c. Cam Pha (21˚02'N., 107˚20'E.).
d. Thanh Hoa (19˚48'N., 105˚46'E.).
e. Vinh (Ben Thuy) (18˚40'N., 105˚40'E.).
f. Quang Khe (17˚41'N., 106˚27'E.).
g. Dong Hoi (17˚28'N., 106˚35'E.).

Approaches and entrances of additional ports in the S part of Vietnam may also be mined and caution is advised.

Navigational Information

Enroute Volume

Pub. 161, Sailing Directions (Enroute) South China Sea and Gulf of Thailand.

Maritime Claims

The maritime territorial claims of Vietnam are, as follows:

Territorial Sea *	12 miles.
Contiguous Zone **	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	200 miles or the Continental Margin.

* Claims half of the Gulf of Tonkin as historical waters. Uses straight baselines for measuring the territorial sea; baselines purport to enclose portions of the South China Sea up to approximately 75 miles in width as internal waters. Requires advance permission or notification for innocent passage of warships in the territorial sea.

** Also considered a Security Zone.

Maritime Boundary Disputes

The delineation of a maritime boundary with Cambodia is hampered by a dispute over offshore islands.

Involved in a complex dispute with China, the Philippines, Taiwan, Malaysia, and possibly Brunei over the Spratly Islands (8˚38'N., 111˚55'E.). The 2002-issued *Declaration on the Conduct of Parties in the South China Sea* has eased tensions but falls short of a legally-binding code of conduct desired by several of the disputants.

Claims the Paracel Islands (16˚40'N., 112˚20'E.), which are currently occupied by China and also claimed by Taiwan.

A maritime boundary and joint fishing zone agreement with China remains unratified.

Pilotage

Pilotage is compulsory for all vessels entering or leaving Vietnamese ports which are open for international trade The pilot should be ordered 24 hours in advance and confirmed 6 hours in advance. The pilotage request can be made on VHF channel 16

In general, all foreign vessels without special clearance must proceed to Hai Phong to board a pilot for any of the deep-water ports in the N part of Vietnam.

Vessels proceeding to S ports should contact the authorities in Thang Pho Ho Chi Minh (Saigon) before proceeding within 20 miles of the coast.

Regulations

Special regulations exist for the approach and entry of foreign vessels into Vietnamese waters. In general, only those vessels with specific and prearranged permission should attempt to approach the coast and then only when in contact with the authorities. Permission should be obtained from the Ministry of Communication and Transport, Maritime Legislation Division at least 7 days in advance. The arrival should be reconfirmed at least 24 hours before entering Vietnamese territorial waters.

The following Vietnamese ports are open for foreign trade:

1. Vung Tau.
2. Ho Chi Minh City (Saigon).
3. Nha Trang.
4. Qui-Nhon.
5. Da Nang.
6. Can Tho.
7. Haiphong.
8. Dong Nai.
9. Dong Thap.
10. Hai Thinh.
11. Kien Giang
12. My Tho.
13. My Thoi.
14. Nam Can.
15. Nghe Tinh.
16. Quang Ninh.
17. Thanh Hoa.
18. Thuan An.

Unless otherwise stated, vessels should send their ETA to the port 48 hours in advance, giving details of the vessel and the cargo on board. The ETA should be confirmed 12 hours, 7 hours, and 2 hours in advance.

Search and Rescue

The Department of Shipping is responsible for coordinating search and rescue operations. Vietnam Maritime Rescue Coordination Center (MRCC) is supplemented by the following Maritime Rescue Coordination Subcenters (MRSC):

1. MRSC Da Nang.
2. MRSC Haiphong.
3. MRSC Vung Tau

Vietnam MRCC can be contacted by e-mail, as follows:

vmrcc@fpt.vn

A network of coast radio stations maintains a continuous listening watch on international distress frequencies.

Time Zone

The Time Zone description is GOLF (-7). Daylight Savings Time is not observed.

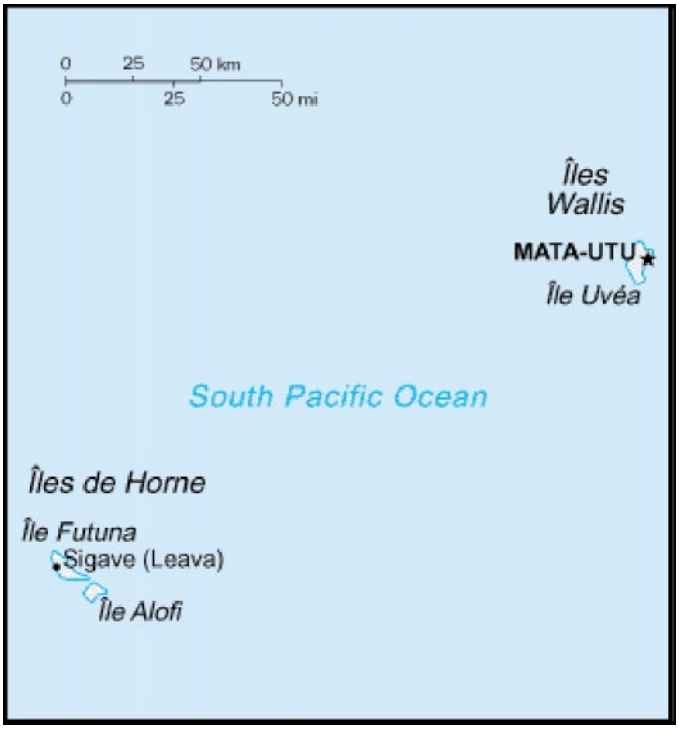
U.S. Embassy

The embassy is situated at 7 Langha Street, Ba Dinh District, Hanoi.

The mailing address is PSC 461, Box 400, FPO AP 96521-0002

U. S. Embassy Vietnam Home Page
http://hanoi.usembassy.gov

WALLIS AND FUTUNA



General

Wallis and Futuna, an overseas territory of France, consists of two small groups of volcanic and coral islands. It is located in the South Pacific Ocean, lying between 13˚20'S and 14˚21'S, and 176˚10'W and 178˚10'W.

Iles Wallis consists of the main island of Ile Uvea and 22 off-lying islets enclosed within a single barrier reef. Ile Uvea is 7 miles long by 4 miles wide and rises to a maximum height of 143m.

Ile Futuna and Ile Alofi make up Iles de Horne, located about 125 miles SW of the Iles Wallis. The islands are of volcanic origin and surrounded by a fringing reef. Ile Futuna is 7 miles long by 4 miles wide and rises to a height of 760m. Ile Alofi is about 5 miles long by 3 miles wide and rises 365m above sea level.

The climate is tropical. It is hot and rainy from November to April. It is cool and dry from May to October.

Buoyage System

The IALA Buoyage System (Region A) is in effect. See Chart No. 1 for further IALA Buoyage System information.

Cautions

Iles Wallis have been reported (1978) to lie 2 miles W of their charted positions.

Currency

The official unit of currency is the 1 CFP franc, consisting of 100 centimes.

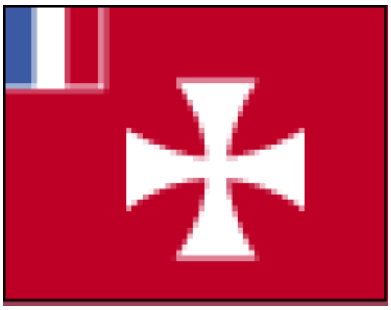
Government

Wallis and Futuna are overseas territories of France.

Wallis and Futuna is governed by a French administrator and a unicameral Territorial Assembly consisting of 20 directly-elected members serving 5-year terms. In addition, there are three traditional Kings with limited powers

The legal system is based on French law.

The capital is Mata-Utu on Ile Uvea.



Flag of Wallis and Futuna

Holidays

The following holidays are observed:

January 1	New Year's Day
Good Friday	Variable
Easter Sunday	Variable
Easter Monday	Variable
May 1	Labor Day
May 8	World War II Victory Day
Ascension Day	Variable
Whitsunday	Variable
Whitmonday	Variable
July 14	Bastille Day
August 15	Assumption Day
November 1	All Saint's Day
November 11	Armistice Day
December 25	Christmas Day

Industries

The main industries are based on copra, handicrafts, fishing, and lumber.

Languages

French is the official language. The indigenous language of the group is a Polynesian dialect similar to Tongan.

Navigational Information

Enroute Volume
Pub. 126, Sailing Directions (Enroute) Pacific Islands.

Maritime Claims
The maritime territorial claims of Wallis and Futuna are, as follows:

Territorial Sea	12 miles.
Contiguous Zone	24 miles.
Fisheries or Economic Zone	200 miles.
Continental Shelf	Depth of 200m or the Limit of Exploitation.

Time Zone

The Time Zone description is MIKE (-12). Daylight Savings Time is not observed.

U.S. Embassy

There are no U.S. diplomatic offices.